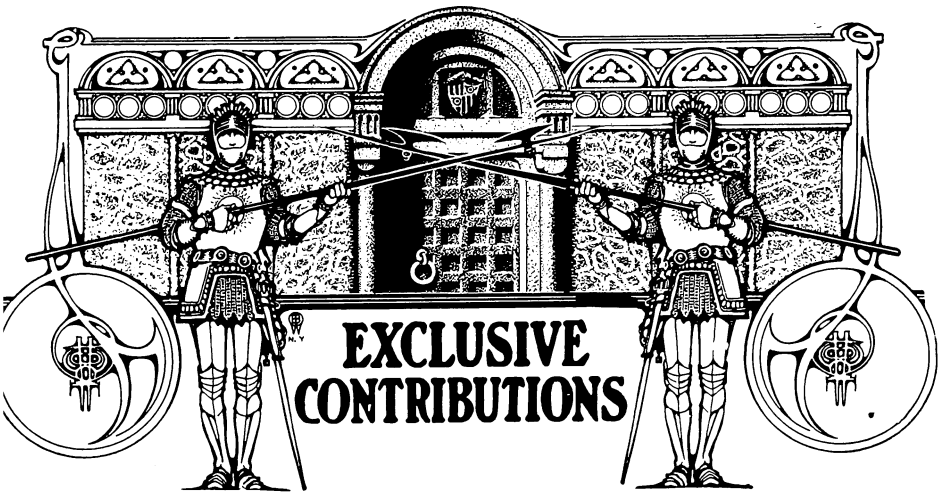


The Gold Inlay.*

By Dr. J. V. Conzett.

Cavities occurring in the distal surfaces of the cuspid teeth are difficult to fill with gold by reason of the position of the tooth in the arch and its conical shape, which effectually prevents the treatment that would be given to a cavity occurring in the same surface of a bicuspid or molar. The step cavity, as used in these teeth, is contraindicated in the cuspid, for the reason that there is not sufficient body of tooth on the incisal surface to carry all of the burden of retention, which is demanded of the preparation in the step cavities in the molars and bicuspids, for in making a gold filling in cavities in the occluso-approximal surfaces of these teeth we use the non-cohesive foil in the gingival third and depend on the retention of the filling by the shape of the cavity, cut as a step in the occlusal surface, which is filled with cohesive foil, and locks in the non-cohesive foil which has been used in the gingival third. This treatment is obviously impossible in the filling of the cavities in the distal surfaces of the cuspids, because there would not be sufficient tooth structure in the incisal third to make an anchorage sufficiently strong to retain a filling in which the retention gained by a gingival retention has been neglected.

The simple proximal cavity preparation, as used in the proximal surfaces of the incisors, is also contraindicated, because of the difficulty of the adaptation of the gold to the surfaces of the cavity walls, and for

that reason so many of the cavities that have been filled in that way have failed.

To obviate the difficulties encountered in the filling of this class of cavities with gold, Dr. Wedelstaedt has proposed the incisal step cavity, in which the incisal portion of the cavity is cut away sufficiently far to obtain perfect access to all parts of the cavity, and then a gingival retention is made, which is easily filled from the space obtained by cutting off the incisal portion of the tooth, and then the preparation is completed by the making of an incisal anchorage, which supplements that in the gingival third. There are some objections to the method from the standpoint of æsthetics, for the cutting off of the incisal portion of the tooth to obtain the step brings the gold into the line of vision to a greater or lesser extent; but the salvation of the tooth is in the majority of cases of more importance than the hiding of the small amount of gold that is seen. However, it is always best to hide the work of restoration if it is possible to do so, for the work of the artist is best when it so closely approximates that of nature that it is not discerned as art. So when it is possible for us to hide gold that is used in the restoration of a tooth, without endangering the life of the filling or of the tooth, it should be done. As I said before, it is a very difficult thing to do this perfectly in the filling of cavities of this class with gold foil, but it is not so difficult in the making of a restoration with the cast gold inlay. The reason is that the wax can be adapted to a cavity that would be impossible to fill with gold; therefore we will depart to some extent from the methods used in the filling of these cavities with gold foil.

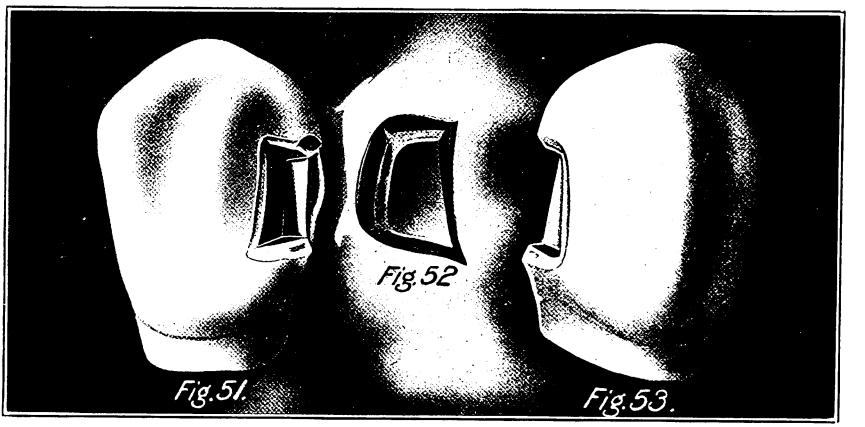
Distal Cavities in Cuspids.

When a cavity presents in the distal surface of a cuspid, and is not of such an extent that it involves the angle, the cavity preparation will be practically that which would be used in the treatment of such a cavity in the same surface of any of the front teeth. Inasmuch as gold is to be the material used for the restoration, and as we wish to hide the work of the artist as much as is consistent with safety, we will approach the area of decay from the lingual surface, and so shape our cavity that the inlay will be placed from the lingual aspect. With the chisel the overhanging enamel walls are broken down as far as it is possible to do so, and the decay scooped out with a spoon excavator. Then with a cross-cut fissure, or inlay bur, the cavity is given a flat axial wall, cutting a flat seat at the same time in the labial wall of the cavity. This wall should be cut away sufficiently to bring the margin of the inlay into safe territory; that is, it should extend out onto the labial surface sufficiently far to be kept clean. The doctrine of extension for prevention must never be lost sight of for a moment, for when we do we will find that it will mean

failure for us sooner or later, no matter what material or method we may be using for the restoration of the tooth under our care at the time. The gingival seat and the incisal portion of the cavity should be slightly undercut so that the inlay will draw, in only one direction. The cavo-surface angles should be carefully beveled that the enamel rods in all portions of the cavity may be perfectly protected by the finished inlay.

Importance of Beveling Margins.

A discussion has arisen as to the absolute necessity for the beveling of all of the cavo-surface angle, and when the relation of the enamel rods to the contour of the tooth was pointed out, the contention was



that if a perfect knowledge of the position of the rods obtained in the mind of the operator in all cases, he could so place his cavo-surface angle that the rods would all be long rods, and the necessity for a bevel would be obviated. This is undoubtedly true, but there are very few men who know their histology so well, and the rods do not place themselves in the same relations in all teeth, and so few men are so expert with the chisel in determining the exact relation of the rods, that it is far safer to bevel all of the margins, and we will then be sure that we have not overlooked some vulnerable spot where the rods are short, which spot may give us an uneasy half hour at some future time. Again, in the making of an inlay it is well to have a well-defined margin of gold that can be perfectly burnished down to the margins, and this margin is made in no way so well as that which is given to the wax model when the wax is adapted over the margin which is made by the beveling of the cavo-surface angle.

Fig. 51 is a view of a cavity which has been made in the distal surface of a cuspid to illustrate the method used in the treatment of a case

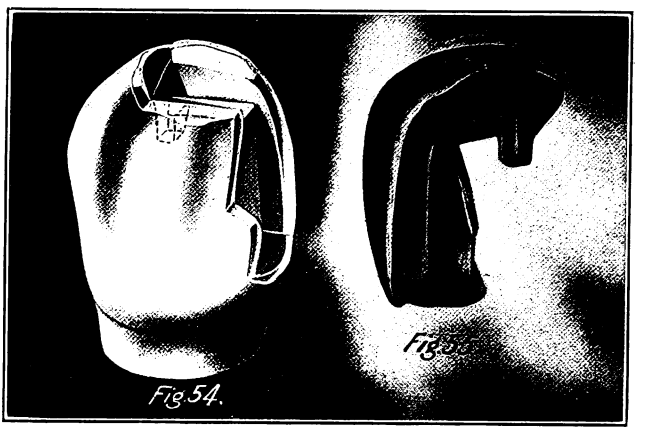
of this class. In Fig. 53 is shown the labial aspect of the same, and this will illustrate the amount of cutting thought necessary to bring the margin of the cavity into safe territory in this location. The incisal third of the inlay will have to carry the contact point, and this must be so made that in its contact with the approximating bicuspid it will hold the incisal margin of the inlay free from contact with the bicuspid. Fig. 52 shows the cavo-surface of the inlay made for this cavity.

Distal Cavities Involving Incisal Angle in Cuspids.

When there is any considerable decay in the distal portion of a cuspid it will usually be necessary to protect the angle in some way. In the making of a gold inlay there are two ways that may be used successfully, and both have been habitually used in my practice. The first method is to make a step in the incisal portion of the tooth by grinding away a portion of the incisal angle with a carborundum stone of suitable size. The step should be deep enough to allow for enough gold to withstand the stress of occlusion without flowing, and should be deep enough to give enough resistance to the inlay. In this form of preparation a very considerable amount of the retention will necessarily be carried by the incisal step; consequently it must be made deep and broad enough to successfully carry the burden that will be placed upon it. I have seen some fillings of this class fail by reason of the fact that too little depth was given to the incisal portion of the cavity, so that there was not sufficient retention, and the inlay would fall out.

The incisal portion of the cavity should be as deep as is consistent with pulpal safety. To obviate the danger of pulp exposure when making the incisal anchorage, the mesial portion of the step should always be carried beyond the middle third of the incisal surface, and then the retentive well sunk into that portion of the tooth will not be in danger of infringing upon the pulp. The gingival seat should be made flat, as in all of our cavity preparations, and the axial walls formed at right angles therewith. The gingival seat can be squared out with an inverted cone, and the walls paralleled with either a fissure or an inlay bur. Care should be exercised to have the walls as straight as possible, for the success of a cavity in this portion of the tooth made in this way will very largely depend upon the condition of the axial walls, for we do not have the body of tooth substance to depend upon for anchorage in the incisal portion of the tooth that we have in the same class of cases in the molars or bicuspids; therefore, we will be much more dependent upon the retention that we gain in the middle and gingival thirds of the axial walls, and not so much upon the retention of the step in the incisal third. As will be seen in the model, Fig. 54, the walls of the cavity,

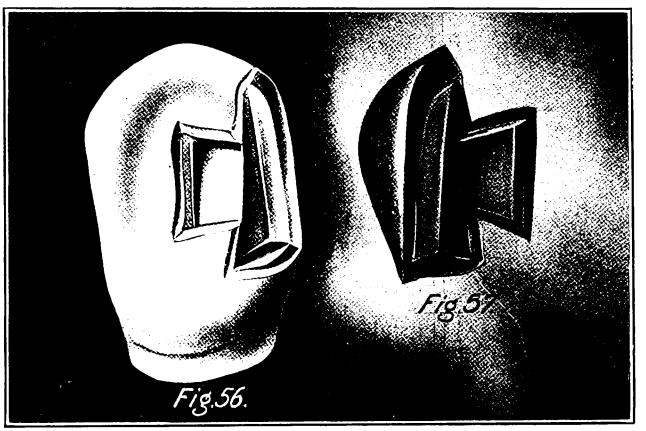
being made parallel, cannot be carried together to the step, because the conical shape of the tooth will cause one of the lines to leave the cone and go off into space; therefore, for æsthetic reasons, we will choose to have the line following the lingual plate be the one that will leave the tooth, because, if we allow the one on the labial surface to do so, it would look very badly; besides, the shape of the tooth, not being a perfect cone, is such that such treatment is the logical one, even if we were to



ignore the appearance of the finished inlay. We may commence the lingual portion of the incisal step where the lingual axial margin leaves the tooth if we desire in some cases, or we may make a double step on the lingual surface and commence the incisal step further up if it is thought better in the case under consideration. The incisal step should be grooved throughout its length, as indicated in Fig. 54, and at the extreme mesial portion of the step a well of considerable depth should be sunk into the dentine for retention, and to prevent lateral displacement. This well is also indicated in the same illustration (Fig. 54a). We will find it necessary to make a decided retention of this kind in cavities of this class when the inlay is to be used, more than we would find it at all necessary, or even advisable, for the making of a gold filling, for the reason that in the making of a gold filling we would depend very largely upon the dovetail form that a cavity made in the disto-axial portion of a cuspid would naturally take. But in the making of an inlay this naturally retentive form that the cavity would tend to assume must be guarded against, or the model will not draw, and as a consequence we will have to neglect the gingival retention in the making of an inlay and depend almost entirely upon the retention that we may be able to obtain in the incisal portion of the tooth. This preparation, while very good

for a filling, has many points of weakness when we attempt to adapt it for the inlay, so I very frequently use another form of preparation for this class of cavities, and it has done such good service that I do not hesitate to advise it. Fig. 55 shows inlay made for cavity shown in Fig. 54.

When we find the decay extensive and the angle so weak that it is necessary to protect it, as we would in the case of the incisal step, cut the axial walls of the tooth until you obtain sound tissue, even though you may have to cut to the middle of the tooth. Then square out the gingival seat and flatten the axial wall as much as may be, always



approaching your cavity from the lingual surface, so that all lines of the cavity will allow the inlay to draw from the lingual surface. Then cut an offset step into the lingual surface of the tooth and dovetail this so that it will prevent displacement toward the distal. Fig. 56 will illustrate the idea better than words could do. It will be seen that the lines of the cavity from the labial aspect are practically straight from the gingival to the incisal surface, and the shape and position of the tooth are such that such a filling is not very conspicuous, making a very much better-looking operation than one in which the incisal portion of the tooth is cut off and restored with gold, and, in the case of the inlay at least, a much better cavity formation from the standpoint of retention. In all of the preparations the cavo-surface angle must be carefully prepared so that the rods will be properly protected. In the case of the last preparation the bevel must not be of such a degree that it will cause the wax to wrap itself around the tooth and prevent the drawing of the model toward the lingual, for of course that would defeat the desired end. Figs. 52, 55 and 57 will show the inlays made in the cavities illustrated. A study of the inlays will often help to a better understanding of the cavity preparation.

EXCLUSIVE CONTRIBUTIONS

Dental Radiography.*

Summaries of Conditions Under Which Radiographs Are Made, and Technic for Using a Small High Frequency Coil.

By Howard R. Raper, D.D.S.,

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CHAPTER V—*Continued.*

That the student of dental radiography may learn the different conditions under which radiographs of the teeth and jaws are made, I give the following summaries in which are recorded the important factors:

The summaries, in the order in which they follow, to and including Fig. 115, represent some experimental work done by the writer. These reports, like most reports, make very dry reading, but they contain some information of importance. A study of the summaries for Figures 81, 111, 97, 99 and 103, will give a tolerably good idea of what can be done with an induction coil. A study of the summaries for Eigures 112, 113, 114 and 115 will give an idea of what can be accomplished with a small, suit case, high frequency coil.

A careful reading of the "comment" at the close of some of the summaries is especially advised, because therein will be found some valuable pointers.

Fig. 81. To make the negative of the radiograph shown in Fig. 81 the conditions were as follows:

1. Machine used: A Scheidel, 18-inch, induction coil with 2-point, electrolytic interrupter, operating on a 110-volt D. C. circuit. All the resistance of the rheostat cut out.

2. Strength of current: No meters on machine. A rough guess would be 26 amperes in the primary, about 13 milliamperes sent through the tube. Ten (10) inches of fat, fuzzy, yellow spark obtainable.

3. Make and condition of tube used: Green and Bauer, "Cloverleaf," 6-inch tube. Length of tube-regulating spark gap, 3½ inches. Tube backs up 7 inches parallel spark. The tube vacuum is therefore high, and the X-rays produced penetrating. No penetration guide used.

4. Distance of target from film, between 12 and 13 inches. Distance of glass of tube from face, about 8 inches.

5. Thickness of part: That of superior maxillary bone and overlying tissues, *about* 1½ inches.

6. Density of part: That of superior maxillary bone and overlying tissues. (Density varies slightly with age, growing denser.)

7. Film used: Eastman (positive cinematographic) X-ray film.

8. Time of exposure: Eight (8) seconds.

9. Time in the developer, and developer used: Five (5) minutes in Eastman's "M. Q." prepared developer.

Comment: When using an Ilford film the exposure can be reduced one-half, *i. e.*, to 4 seconds, and the time in the developer remains 5 minutes. The negative of Fig. 83 was made on an Ilford film, exposure 4 seconds.

It will not be amiss here to give my readers some idea of how I "guessed" at the amperage and milliamperage, respectively, of my primary and secondary currents. The fuses just in front of my coil are 30 ampere fuses. I know, therefore, that I am drawing something less than 30 amperes. I know also that I must be drawing almost 30 amperes

Fig. 111. The two circular shadows in the corners are due to small paper clips used to hold the intensifying screen and film together.

with all the resistance of the rheostat out, and I make a rough guess of 26, leaving a margin of 4 amperes between the current I am using and one which would "blow" (burn) the fuses. Having guessed at the amperage, I calculate that the average induction coil is capable of forcing one-half as many milliamperes through a high vacuum tube as it draws amperes in its primary. Thus, if the coil draws 26 amperes the milliamperage output through a high vacuum tube is 13.

A high frequency coil is capable of forcing two-thirds as many milliamperes through a high tube as it draws amperes in its primary, and the interrupterless coil can force about four-fifths as many milliamperes through a high tube as it draws amperes into its primary. This is only an estimate, not a mathematical fact.

Fig. 111. To make the negatives of the radiagraph shown in Fig. 111 the conditions were as follows:

1. Machine used: Same as for Fig. 81.

2. Strength of current: Same as for Fig. 81.

3. Make and condition of tube: Same as for Fig. 81.

4. Distance of target from film: About 13 inches. Distance from glass of tube to patient's face, about 8 inches. Pose as in Fig. 89.

5. Thickness of part: Same as in Fig. 81.

6. Density of part: Same as in Fig. 81.

7. Film used: Ilford film, with a Kny-Scheerer intensifying screen. (I wish to thank the Kny-Scheerer Mfg. Co. for their kindness in making a dental intensifying screen after my instructions, and furnishing me with samples for experimental purposes.)

8. Time of exposure: One (1) second.

9. Time in the developer, and developer used: Four (4) minutes in the Eastman "M. Q." developer.

Comment: Had the intensifying screen not been used, the time of exposure would have been about four (4) seconds. Thus the use of the screen shortened the time of exposure necessary three-fourths (¾).

Fig. 97. To make the negatives of Fig. 97 the conditions were as follows:

1. Machine used: Same as for Fig. 81.

2. Strength of current: Same as for Fig. 81.

3. Make and condition of tube: Same as for Fig. 81.

4. Distance of target from film: About 14 inches. Distance of glass of tube from face, about 8 inches. Pose as in Fig. 97.

5. Thickness of part: Tissues of neck, mandible and overlying parts—about 3 inches.

6. Density of part: That of tissues of neck, mandible and overlying parts.

7. Film used: Ilford film.

8. Time of exposure: Thirty-five (35) seconds.

9. Time in the developer, and developer used: Five (5) minutes in Eastman "M. Q." developer.

Fig. 99. To make the negative of the radiograph shown in Fig. 99 the conditions were as follows:

1. Machine used: Same as for Fig. 81.

2. Strength of current: Same as for Fig. 81.

3. Make and condition of tube: Same as for Fig. 81.

4. Distance of target from film: About 16 inches. Distance of glass of tube from patient's neck, about 8 inches. Pose as in Fig. 98.

5. Thickness of part: That of the tissues of the neck, the mandible and overlying parts—about 5 inches.

6. Density of part: That of the tissues of the neck, mandible and overlying tissues.

7. Film used: Lumiere, "Sigma," double-coated, 5x7-inch X-ray plate.

8. Time of exposure: Thirty-five (35) seconds.

9. Time in developer, and developer used: Fifteen (15) minutes in Eastman "M. Q." developer.

Fig. 103. To make the negatives of the radiograph shown in Fig. 103 the conditions were as follows:

1. Machine used: Same as for Fig. 81.

2. Strength of current: Same as for Fig. 81.

3. Make and condition of tube: Same as for Fig. 81.

4. Distance of target from plate: Between 12 and 13 inches. Distance of glass of tube from patient's face and neck, about 6 inches. (This is bringing the tube about as close to the patient as it can be placed with safety.) Pose similar to Fig. 102.

5. Thickness of part: That of the tissues of the neck, the mandible and overlying tissues for the lower jaw, and the cheek, the superior maxillary bone and overlying tissues for the upper jaw—3 to 4 inches.

6. Density of part: As above, under "thickness of part."

7. Plate used: Lumiere, "Sigma," double-coated, 8x10-inch X-ray plate.

8. Time of exposure: Forty-five (45) seconds.

9. Time in the developer, and developer used: Ten (10) minutes in the Eastman "M. Q." developer.

Comment: After such an exposure the tube would be very warm, and should be allowed to cool thoroughly before using again.

The rule to allow the film or plate to remain in the developer twenty times as long as it takes the high lights to show up well is often inapplicable when developing these large pictures on plates. It is sometimes necessary to leave the plate in the developer thirty or forty times as long as it takes the high lights to appear. Allow the plate to remain in the developer until almost all black—not jet black, but darkened well. It is difficult to the point of being impossible, usually, to see the image while the plate is in the developer; only an obscure suggestion of the radiograph can be seen.

Had the negative for Fig. 103 been left in the developer but 5 or 6 minutes instead of 10, or had the exposure been made slightly shorter, say 40 seconds, then the outline of the mandible would not be lost, as it is.

Fig. 100. To make the negative of the radiograph shown in Fig. 100 the conditions were as follows:

1. Machine used: Kelly-Koett, "Grosse-

Flamme," induction coil on third inductance, with 7-point electrolytic interrupter, operating on a 110-volt D. C. circuit.

2. Strength of current: Primary about 40 amperes. Milliamperage sent through tube, about 20. Fat, fuzzy spark obtainable full length of spark gap, 12 inches.

3. Make and condition of tube: Green and Bauer, "Cloverleaf" 6-inch tube. Length of tube regulating spark gap, about 4½ inches. Tube backs up 7 or 8 inches of parallel spark.

4. Distance of target from plate: About 16 inches.

5. Thickness of part: See Fig. 101.

6. Density of part: That of tissues of the neck, mandible and overlying parts for the lower jaw, and superior maxillary bone and overlying parts of the upper jaw.

7. Plate used: Lumiere, X-ray plate, 5x7 inches.

8. Time of exposure: Ten (10) seconds.

9. Time in developer, and developer used: Five (5) minutes in "M. Q." prepared developer.

Comment: The Kelly-Koett, Gross-Flamme, coil is one of the most powerful induction coils made.

Fig. 105.

To make the negative of the radiograph shown in Fig. 105 the conditions were as follows:

1. Machine used: Kelly-Koett, "Gross-Flamme" induction coil on inductance four, with 7-point electrolyte interrupter, operating on 110-volt D. C. circuit.

2. Strength of current: Primary, 50 amperes. Milliamperes sent through tube, about 25.

3. Make and condition of tube: Green and Bauer, "Cloverleaf" 6-inch tube. Length of tube regulating spark gap, 5 inches. Tube backs up 8 inches of parallel spark.

4. Distance of target from plate: About 19 inches.

5. Thickness of part: That of the cranium coverings and contents, about 8 inches. (Fig. 104.)

6. Density of parts: That of the cranium, coverings and contents.

7. Plate used: Cramer X-ray plate, 8x10 inches, with intensifying screen.

8. Time of exposure: Three (3) seconds.

9. Time in developer, and developer used: Seven (7) minutes in water, 32 oz.; soda sulphite, 12 dr.; hydrochinone, 2 dr.; edinol, 75 gr.; potassium bromide, 90 gr.; potassium carbonate, 2 oz.

Comment: Had an intensifying screen not been used, the time of exposure would have been about ten (10) seconds.

Fig. 112. To make the negative of the radiograph shown in Fig. 112 the conditions were as follows:

1. Machine used: Scheidel-Western, portable high frequency, 6-inch coil, operating on 104-volt A. C. circuit. (I wish to acknowledge my indebtedness and express my sincere thanks to the Scheidel-Western X-ray Coil Mfg. Co., who furnished me with their coil for experimental work.)

2. Strength of current: No meters. A rough guess, 12 amperes in primary. Milliamperage sent through tube, about 8. Fat, fuzzy spark 6 inches long obtainable.

Fig. 112.

3. Make and condition of tube: Green and Bauer, 6-inch, high frequency tube. Tube-regulating spark gap, 5 inches. (In my limited experience I have found that the tube-regulating spark gap must be longer for high frequency tubes to obtain the same condition of vacuum.) Tube backs up 6 inches of parallel spark.

4. Distance of target from film: Between 11 and 12 inches. Distance between glass of tube and patient's face, about 7 inches.

5. Thickness of part: That of superior maxillary bone and overlying tissues.

6. Density of part: That of superior maxillary bone and overlying tissues.

7. Film used: Ilford X-ray film.

8. Time of exposure: Ten (10) seconds.

9. Time in developer: Five (5) minutes in "M. Q." developer.

Comment: How can a tube backing up 6 inches of parallel spark be operated by a coil the terminals of which are only 6 inches apart? is a natural and fair question. This is accomplished by placing an upright piece of plate-glass between the terminals of the coil, which prevents sparking between them.

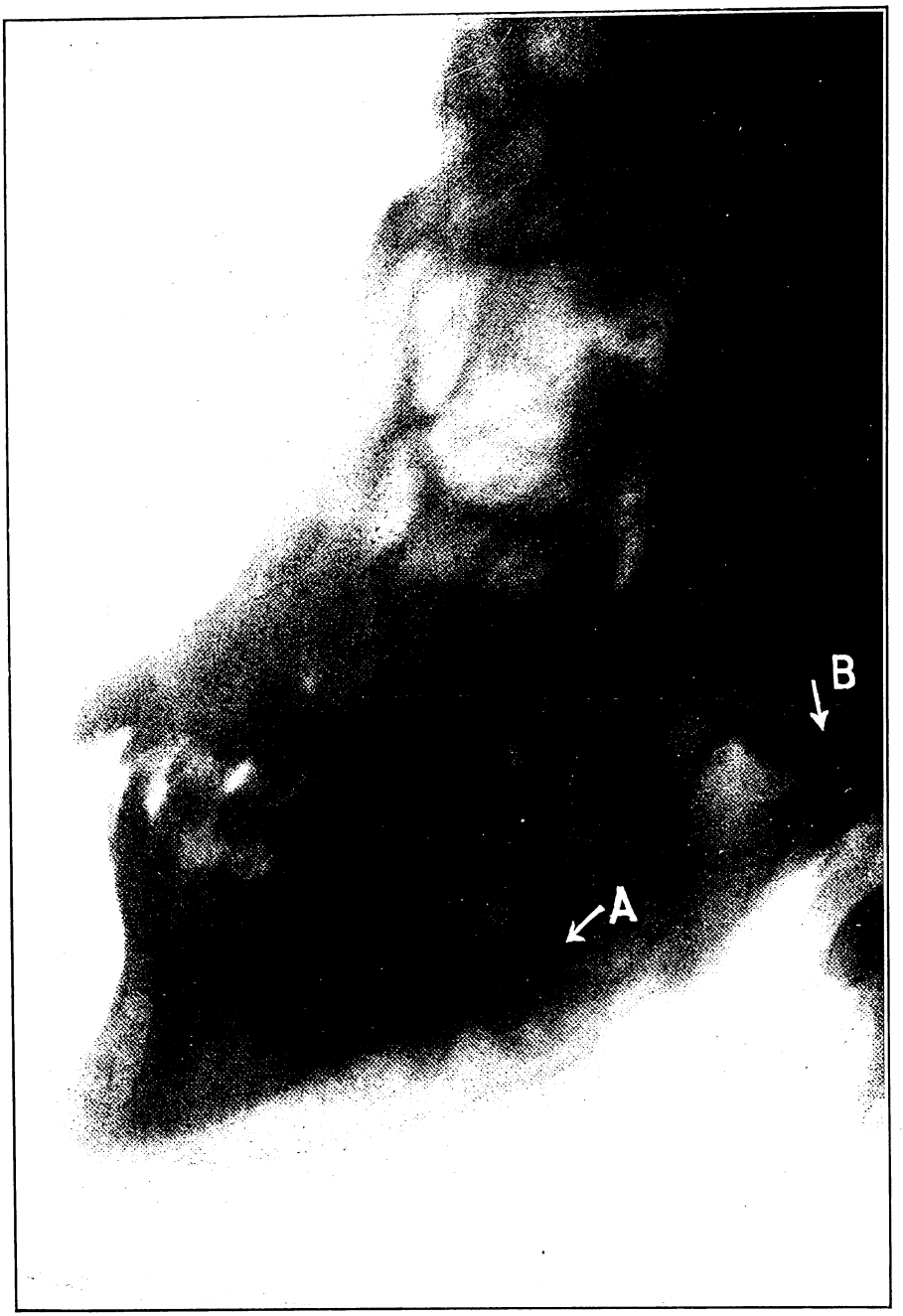


Fig. 113. Arrow A points to an impacted lower third molar. Arrow B points to the tempero-mandibular articulation, which shows very clearly in this picture.

With conditions as above, an exposure of about 20 seconds is necessary when Eastman films are used.

Be it understood that 10 seconds for Ilford films and 20 seconds for Eastman films do not represent the minimum exposures for the making of dental radiographs under the conditions as above. For example, I was able to obtain a tolerably good radiograph after a 10-seconds exposure on an Eastman film by leaving it in the developer 14 minutes. To obtain the best pictures, however, the exposure should be 10 seconds for Ilford films and 20 seconds for Eastman films.

Fig. 113. To make the negative of the radiograph shown in Fig. 113 the conditions were as follows:

1. Machine used: Same as for Fig. 112.

Fig. 114.

2. Strength of current: Same as for Fig. 112.

3. Make and condition of tube: Same as for Fig. 112.

4. Distance of target from plate: Between 12 and 13 inches. Distance of glass of tube from patient's face and neck, 6 inches. Pose similar to Fig. 102.

5. Thickness of part: That of tissues of the neck, mandible and overlying parts for the lower jaw, and the superior maxillary bone and overlying parts for the upper jaw—3 to 4 inches.

6. Density of part: As above under "thickness of part."

7. Plate used: Lumiere, "Sigma," double-coated, 8x10-inch X-ray plate.

8. Time of exposure: Sixty (60) seconds.

9. Time in the developer and developer used: Seven (7) minutes in Eastman "M. Q." developer.

Comment: The tube-regulating spark gap was set at a distance of

Fig. 115. Arrow A points to an unerupted lower third molar. Arrow B points to the tempero-mandibular articulation, which shows very clearly in this radiograph. The triangular spot marked C is the result of not completely covering the plate immediately when it was placed in the developer.

5 inches, or perhaps a little longer, and at no time did the current jump the gap. Theoretically, as the current passes through the tube the vacuum becomes higher. I was considerably surprised, therefore, to observe after the current had been passing through the tube for about 50 seconds that the blue cathode stream could be seen, indicating a very low vacuum. My friend, Mr. Darling, a designer of coils, informs me that this lowering of the vacuum is due to heating of the tube. The milliamperage sent through it heats the entire tube, which means, of course, that the regulating chamber and its contents are heated, gases from the regulating chamber are liberated, and so the vacuum is lowered, without at any time a spark occurring at the tube-regulating spark gap.

It is well to mention here, perhaps, that there is very often a blue color back of the target in high frequency tubes, which does not signify a low vacuum. However, when a blue cathode stream can be seen, or when there are areas of blue in any part of the active hemisphere, it signifies a vacuum too low for good picture work.

Fig. 114. To make the negative of the radiograph shown in Fig. 114 the conditions were as follows:

1. Machine used: Scheidel-Western, portable high-frequency, 6-inch coil, operating on a 70-volt A. C. circuit generated by a rotary converter. The rotary converter being set in motion by the commercial 110-volt D. C.

2. Strength of current: The primary current furnished by the converter, about 5 amperes. Milliamperage sent through tube, 3 or a little over. A tolerably fat, fuzzy spark four (4) inches long obtainable. The spark, instead of being white or yellow as when the milliamperage is high, is of a blue or purplish color.

3. Make and condition of tube: Same as for Fig. 112.

4. Distance of target from plate: Same as for Fig. 112.

5. Thickness of part: Same as for Fig. 112.

6. Density of part: Same as for Fig. 112.

7. Film used: Ilford X-ray film.

8. Time of exposure: Fifteen (15) seconds.

9. Time in the developer and developer used: Six (6) minutes in the Eastman "M. Q." developer.

Comment: Because of the considerable difference in the milliamperage sent through the tube it might be expected that there would be an increase in the time of exposure necessary when operating the high frequency coil from a rotary converter. Using the same coil, the time of exposure when the coil is excited by the rotary converter should be, to obtain the same results, about one-half longer than when the coil is operating from the commercial 104-volt A. C.

Fig. 115.

To make the negatives of the radiograph shown in Fig. 115 the conditions were as follows:

1. Machine used: Same as for Fig. 112.

2. Strength of current: Same as for Fig. 112.

3. Make and condition of tube: Same as for Fig. 112.

4. Distance of target from plate: Between 12 and 13 inches. Distance of glass of tube from patient's face, about 6 inches. Pose similar to Fig. 102.

5. Thickness of part: That of the tissues of the neck, the mandible

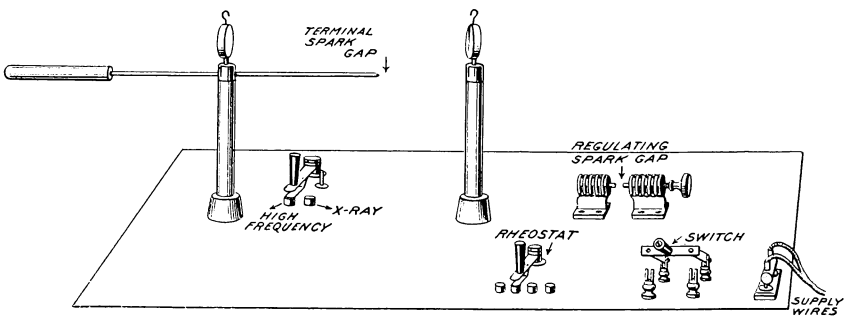


Fig. 116. Diagram of portable, high frequency coil.

and overlying parts for the lower jaw, and the superior maxillary bones and overlying parts for the upper jaw.

6. Density of part: As given under "thickness of part."

7. Plate used: Lumiere, "Sigma," double-coated, 8x10-inch X-ray plate.

8. Time of exposure: Seventy-two (72) seconds.

9. Time in the developer, and developer used: Fourteen (14) minutes in the Eastman "M. Q." developer.

Comment: When the time of exposure is so long, 72 seconds, as in this case, the matter of a couple of seconds or so makes little or no difference. That is to say, the time of exposure might have been, say, 70 or 75 seconds, and the same results obtained as with an exposure of 72 seconds; and this without altering the time in the developer. When developing an especially sensitive plate, such as the one used in this case, the Lumiere "Sigma" plate, for a considerable length of time it is not expedient to keep it constantly exposed to the ruby light. Fogging might result.

It will be noticed that to make this negative the time of exposure was only one-fifth longer than to make the negative for Fig. 113. Ac-

cording to my remarks under the heading "Comment" in the summary of the conditions under which Fig. 114 was made, the exposure should have been "about one-half longer to obtain the same results." But notice, please, that it was necessary to leave the plate for Fig. 115 in the developer twice as long as for Fig. 113. Therefore, I did not get the same results when I increased my exposure only one-fifth.

Technic for Use of High Frequency Coil.

There are two or three special and important points concerning the operation of a high frequency coil that I shall mention here:

First, move the lever at the back of the coil onto the button marked "low frequency" (sometimes "X-rays")—off of the button marked "high frequency." (Fig. 116.) By doing this all of the condenser of the coil is used, and so the rate of frequency lessened. For high frequency treatment work only a part of the condenser is used, with the lever arm on the button marked "high frequency."

Second, cut out all the resistance of the rheostat, separate the sliding rod or rods to the maximum spark gap—usually about 6 inches—and turn on the current.

Third, widen and narrow the "regulating spark gap" until the current is as high in milliamperage as it can be and still jump the terminal spark gap. It will be remembered that widening the regulating spark gap (up to a certain point) increases the voltage of the output current at the expense of the milliamperage, and that narrowing it increases the milliamperage at the expense of the voltage. Alter the regulating spark gap to get as heavy a spark as possible. It should require but a few seconds to accomplish this regulation. Sometimes it is impossible to obtain as fuzzy a spark as you know the machine is capable of giving. This is due to the fact that the little approximating metal studs at the regulating spark gap are dirty. Place a piece of emery cloth between the studs, screw them together until they hold the cloth loosely, then draw the cloth back and forth over the face of the stud. Clean both studs in this way.

Fourth, place a piece of plate glass between the terminals in order that a high vacuum tube, one with a resistance equivalent to 6 or more inches of parallel spark, may be used.

Fifth, connect the tube to the coil, set the tube-regulating spark for about 5 inches, turn on the current and see that the tube lights up O. K.

An Instructive Experience.

I recall and shall here set forth an experience I had while making a radiograph on a large plate with a small, high frequency coil. I had followed the technic given above, posed my patient, and

turned on the current for a one-minute exposure. For the first thirty-five seconds the tube maintained a good light. Then suddenly the current ceased to pass through it. At first I thought I had burned out a fuse. (I was using 15-ampere fuses on the supply wires to protect the coil.) But by turning the switch on and off I learned that in this surmise I was wrong, for when the switch was on there was a humming sound in the coil, and as I turned it off a spark occurred as the circuit was broken. I shortened the tube-regulating spark gap, thinking perhaps the vacuum in the tube had suddenly and mysteriously become so high that the current could not pass through it, but when the current was turned

Fig. 117. Radiograph by Peabody of South Orange, N. J.

on, the only evidence of the fact was a slight humming inside the coil. I disconnected the tube, removed the plate glass from between the terminals and turned on the current, but no spark jumped the gap. Not until then did I realize that the trouble was at the regulating spark gap. I changed the adjustment of the gap slightly and immediately a spark jumped the terminal spark gap. The metal at the regulating spark gap had gotten warm and expanded, thus altering the width of the gap and shutting off the current.

With two exceptions, all the summaries of conditions under which radiographs are made have been records of my own work. (These two exceptions are Fig. 100, made by Dr. A. M. Cole and myself, and Fig. 105, made by Dr. Cole.) That my readers may have some idea of the governing circumstances under which other men make radiographs, I print the following summaries. For the report and radiographs we are indebted to the men whose names appear beneath the radiographs.

Using an Interrupterless Coil.

To make the negative of the radiograph shown in Fig. 117 the conditions were as follows:

1. Machine used: Kny-Scheerer interrupterless coil. Four and one-half kilowatts. Eleven-inch spark gap. Operating on 104-volt A. C. circuit.

2. Strength of current: Primary, 50 amperes. Milliamperage sent through tube, 40. Fat, fuzzy spark obtainable full length of spark gap, 11 inches.

3. Make and condition of tube: Machlett tube, Excelsion brand. Tube backs up about 6 or 7 inches of parallel spark. Penetration of X-rays, 8 Wehnelt, which is the same as 6 Walter. Very penetrating.

4. Distance of target from film: About 12 inches.

5. Thickness of part: That of superior maxillary and overlying tissues.

6. Density of part: That of superior maxillary and overlying tissues.

7. Make of film: Eastern X-ray film.

8. Time of exposure: One (1) second.

9. Time in developer and developer used: Five (5) minutes. Formula not given.

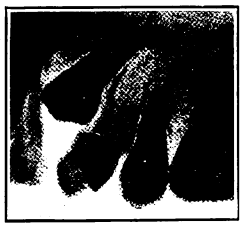


Fig. 118. By Lodge, of Cleveland, O.

Comment: "Four and one-half killowatts" expresses the rating of the machine. Chapter 11.

Had an Ilford film been used instead of an Eastman, the time of exposure would have been one-quarter second. It will be noticed that Dr. Peabody considers the Ilford film four times as fast as the Eastman, while my own experience leads me to believe that it is only about twice as sensitive.

When making exposures that necessitate the splitting of seconds, an automatic switch timer may be used to advantage.

Fig. 118. To make the negative of the radiograph shown in Fig. 118 the conditions were as follows:

1. Machine used: A Ritchie, 10-inch induction coil, with 1-point electrolytic interrupter, operating on a 110-volt D. C. circuit.

2. Strength of current: Fat, fuzzy spark 10 inches long obtainable.

3. Make and condition of tube: Hartford, 7-inch tube. Length of tube-regulating spark gap, 3¾ inches. The tube backs up four (4) inches of parallel spark.

4. Distance of target from film: Ten (10) inches.

5. Thickness of part: That of superior maxillary and overlying tissues.

6. Density of part: That of superior maxillary and overlying tissues. Patient 12 years old.

7. Film used: Eastman dental film.

8. Time of exposure. Six (6) seconds.

9. Time in the developer and developer used: Ten minutes in: Solution A, Water, 64 oz.; metol, 120 grs.; hydrochinon, 120 grs.; Seed's sulphite of soda, 2 oz. Solution B, water, 16 oz.; Seed's carbonate of soda, 2 oz. For use take of A, 4 oz.; of B, 1 oz., and of water, 4 oz.

Fig. 119. To make the negative of the radiograph shown in Fig. 119 the conditions were as follows:

1. Machine used: Scheidel-Western, 12-inch induction coil, with electrolytic interrupter, operating on a 110-volt D. C. circuit.

Fig. 119. By Ketcham, of Denver, Colo.

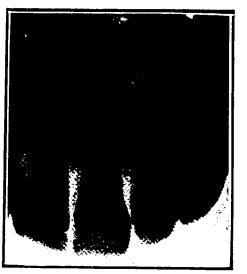


Fig. 120. By Blum, of New York.

2. Strength of current: Eighteen (18) or twenty (20) milliamperes sent through tube.

3. Make and condition of tube: Green and Bauer "Cloverleaf." Length of tube-regulating spark gap: 2½ inches.

4. Distance from target to film: About 18 inches.

5. Thickness of part: That of the body of the mandible and overlying tissues.

6. Density of part That of the body of the mandible and overlying tissues.

7. Film used: Seed's special X-ray film.

8. Time of exposure: About 6 seconds.

9. Time in developer and developer used: About 20 minutes in: Sodium sulphite, 3 oz.; potassium carbonate, 2 oz.; eikogen, 2 oz.; water, 2 quarts. Dissolve in boiling water and filter when cool. Take one part of the developer to three parts of water for use.

Fig. 120. To make the negative of the radiograph shown in Fig. 120 the conditions were as follows:

1. Machine used: A Wrappler 12-inch induction

coil, with 2-point, electrolytic interrupter, operating on a 110-volt D. C. current.

2. Strength of current: Twenty-five (25) amperes in the primary. About 9 inches of fat, fuzzy spark obtainable.

3. Make and condition of tube: Muller, water-cooled. Penetration about 7 Benoist. Length of tube-regulating spark gap, 3½ inches. Tube backs 6 to 7 inches of parallel spark.

4. Distance of target from film: About 14 inches.

5. Thickness of part: That of superior maxillary bone and overlying tissues.

Fig. 121.

6. Density of part: That of superior maxillary bone and overlying tissues.

7. Film used: Eastman positive cinematograph film, sold for dental radiographic purposes.

8. Time of exposure: About 10 seconds.

9. Time in developer and developer used: About 8 minutes in: Water, 10 oz.; sulphite of soda (crystals), 4 oz.; carbonate of potash, 3 oz.; adurol, ½ oz. From the concentrated solution take 2 oz. to 6 oz. of distilled water, and to this mixture add 15 drops of 10% solution of potassium bromide.

Fig. 121.

To make the negative of the radiograph shown in Fig. 121 the conditions were as follows:

1. Machine used: A Scheidel 12-inch induction coil, with 1-point, electrolytic interrupter, operating on a 110-volt D. C. circuit. All of the resistance of rheostat cut out.

2. Strength of current: Thirty (30) amperes in primary. Twelve (12) inches of fat, fuzzy spark obtainable.

3. Make and condition of tube: "Cloverleaf" 6-inch tube. Length of tube-regulating spark gap, 4 inches. Tube backs up 10½ inches of parallel spark.

4. Distance of target from film: Eight (8) inches.

5. Thickness of part: That of lower jaw and overlying parts.

6. Density of part: That of lower jaw and overlying parts.

7. Film used: Eastman's positive cinematograph emulsion.

8. Time of exposure: One (1) second.

9. Time in the developer and developer used: (Time not given.) Developing started in metol-hydroquinone and finished in hydroquinone.

Comment: Notice that the distance between the target and the film is 8 inches. Therefore, the distance between the glass of the tube and the patient's face is only about 4 inches. With the tube this close a "filter" (Chap. VIII) should be used to protect the patient. An aluminum filter was used in this case.

Compressed Air.

By C. Edmund Kells, Jr., D.D.S., New Orleans, La.

On several occasions during recent years there have appeared in the journals papers upon the use of compressed air in the dental office.

And while I have not yet seen any article do the subject full justice, inasmuch as its uses are more diversified in our office than so far described by these writers, it is not the purpose of this short paper to do other than cover some points upon the quality of the air obtained under pressure and under the conditions found in dental offices.

The sources of the air thus used are two: the one in which the dentist himself has installed a small compressor, usually either electric or hydraulic; the other, in which the air is supplied to a large number of tenants in the modern office building.

In the first class we may expect to find the air normally supplied at the chair to be comparatively free from dust, oil, moisture, particles of rust and other foreign substances, but not entirely so.

When all the piping is of copper or tin, rust, of course, is eliminated, but dust and moisture from condensation must always be present in these installations.

In the other case, that in which large quantities of compressed air are furnished office buildings, it may be almost considered a conservative statement to say that the air as supplied is not fit to use, though this fact is not generally appreciated.

For very many years the writer had his own hydraulic, and later an electric compressor, and means were used to eliminate the dust and moisture as much as possible at the tank.

Upon moving into a modern building where air was furnished, we soon learned the fact that the air as furnished us was totally unfit for use.

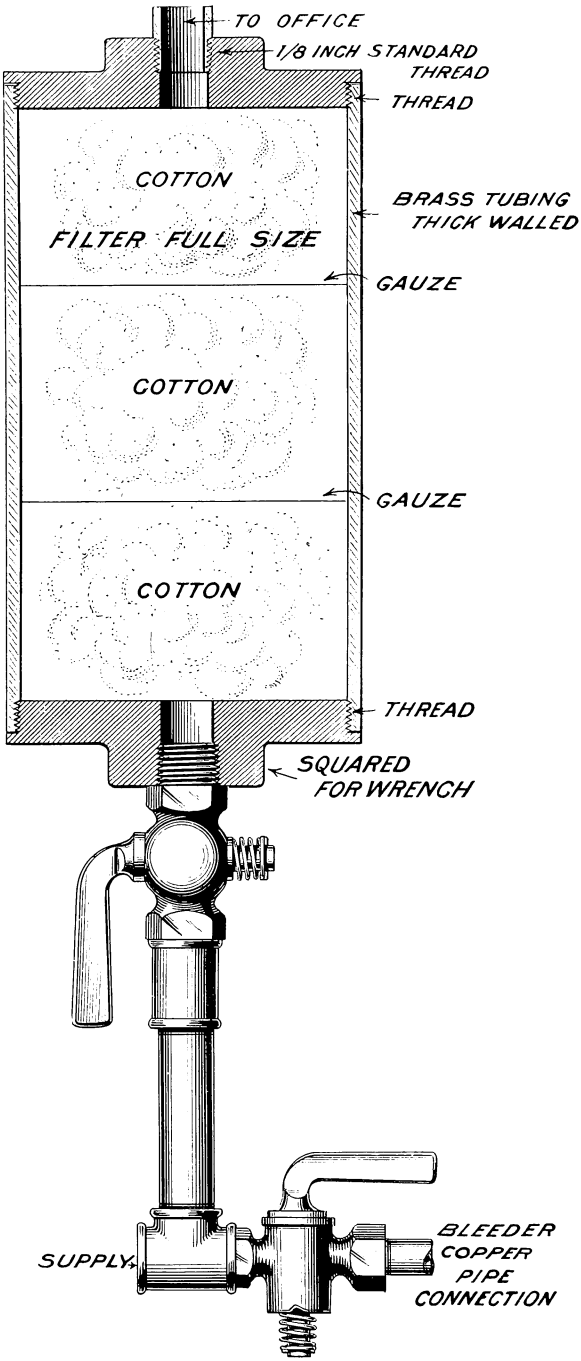
It was constantly charged with large quantities of water and oil, and rust was also an occasional component part, and no small one.

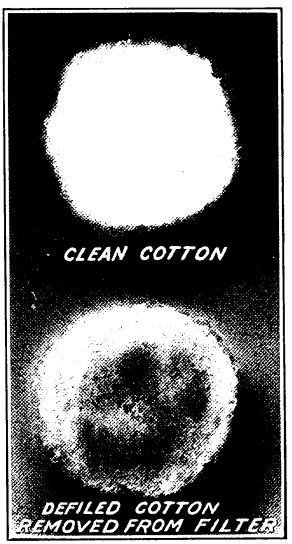
To overcome these disadvantages filters were made and installed in the lines.

The full size illustration shows their construction so clearly that a further description is unnecessary.

At the bottom of the filter is a "bleeder," as I think a plumber would call it. Upon opening this at stated intervals, say once a week, much of the objectionable matter may be blown out, and thus render less frequent the necessity for cleaning the filter.

If possible, this should be connected to some practical outlet. Just


TO OFFICE
1/8 INCH STANDARD THREAD
THREAD
COTTON
FILTER FULL SIZE
BRASS TUBING THICK WALLED
GAUZE
COTTON
GAUZE
COTTON
THREAD
SQUARED FOR WRENCH
SUPPLY
BLEEDER COPPER PIPE CONNECTION


CLEAN COTTON
DEFILED COTTON REMOVED FROM FILTER

how frequently the filter must be cleaned will necessarily depend upon local conditions, and must be determined by the user.

The filter should always be cleaned before the upper layer of cotton becomes contaminated.

This "cleaning" consists of replacing the cotton with a fresh supply and washing out the inside of the filter and the gauze disks.

While variations in the construction of a practical air filter may be legion, the form as described has been found satisfactory in all respects.

A New and Simple Method of Retaining Normal Occlusion, Especially in Reference to Class II (Angle).

By Carl Skogsborg, Stockholm, Sweden.

Read Before the Swedish Dental Society at their 25th Annual Meeting, 1910.

The ingenious apparatuses and methods which nowadays are at our disposition, when moving teeth in orthodontic treatment in order to obtain a normal occlusion, have made this task comparatively easy.

Normal occlusion is our aim, but having accomplished this, we are by no means through with the case. We must also provide the means to retain the teeth in their new position, so that they, in the future, remain in the right relation to each other, and just here is where we often meet our Waterloo.

Specialists and dentists who practice orthodontia, know the feeling of satisfaction when a troublesome case is finished, as far as moving the teeth is concerned. The facial contour is restored to the ideal, or as nearly so as we can attain, the occlusion and the functional part is restored to normal, and we feel proud over the work accomplished.

When, after some time, we see the patient again, and we find that normal conditions are somewhat disturbed, the teeth being on the way back to their former position, our disappointment is by far greater than our previous satisfaction. The moving of the teeth is accomplished in a manner without fault, but we have not been able to secure a faultless retention.

In ITEMS OF INTEREST, year 1907, Dr. H. Pullen defines retention as follows: "Retention may be defined as the maintenance of sufficient antagonism to the forces tending to cause the return of a corrected malocclusion to its original condition to ensure the permanence of the normal relationships of occlusion which have been established."

A great number of different devices and apparatuses have been constructed for the purpose of retaining teeth, and with many of these we obtain good results; with others, not so good. Reliable retaining devices, now used in difficult larger cases, seem to me to be too complicated and tedious in making, also too difficult to keep in condition, to be of real practical value.

In cases belonging to Class I, we retain with bands and spurs in varying combinations, and right here we undoubtedly have the best retainers possible for these cases, and retention is easily accomplished. Cases belonging to Classes II and III are oftentimes very difficult to retain, and, sad to say, it is in these cases where we observe the great tendency of the teeth to return to former positions, and thus destroy our laboriously obtained normal occlusion. In such extensive moving of teeth as we, for instance, deal with in Class II, we do not only change the position of single teeth or groups of teeth, but we also change the form of the alveolar process, and undoubtedly that of the bones themselves.

Here we should follow a natural course of treatment, and mechanically support the alveolar processes in their reconstructed form, sustaining the arches in their new relation to each other, thus assisting in keeping the teeth in their normal occlusion.

Retention of Moved Alveolar Process.

It seems to me our attention has heretofore been centered altogether too much upon the retaining of the teeth themselves, and little or no attention has been paid to the inbedding material of the roots, namely, the alveolar process. The tendency of the teeth to move back to their old position depends not only upon the pericementum, but also upon the elasticity of the alveolar process and, in a certain degree, also upon the pressure of the muscles.

Lip biting and other bad habits, nasal obstructions, etc., will, of course, also have some influence during retention.

The retention apparatus is the means of resistance by which we control or abolish these forces acting on the teeth, and usually these apparatuses are applied so as to touch the crowns of the teeth only at one point.

The resistant factor is thus placed quite far from the most active disturbing force, which lies apically from the necks of the teeth, and therefore the apparatus must be made quite heavy in order to be effective.

We often see, that from the increased pressure on the anchorage teeth, which are usually the first molars, these are moved out of their right position. To judge from my own experience, the method advocated here by some authors, namely, the spur and plane method, is not satisfactory, because these teeth alone are not strong enough to withstand the existing malocclusion tendencies which here are concentrated at one point, and that is where the spur touches the plane. In my opinion, the retention or resistance should be laid as closely to the disturbing forces as possible; that means, not only to the crowns of the teeth, but also to the alveolar process. In order to apply these theories in practice, I have, for the last four years, retained cases of Classes II and III with the so much criticized retention plates of vulcanized rubber, and I must say that I have obtained surprisingly good results with these.

Retention Plate of Rubber.

This retention plate of vulcanized rubber constitutes the mould about which the softened alveolar processes consolidates, and wherein the more or less loosened teeth find their support until they are firm in their sockets, or during the time of retention.

The plate covers and fits into the finest lines and contours of the gums, and by extending up on the lingual surfaces and around the approximal surfaces, as far as the case will permit, it grasps the teeth pretty firmly without being a hindrance to the occlusion.

That pressure which the tongue exerts on the teeth, and processes forward and laterally during masticating, swallowing and talking is eliminated by the plate, for the reason that the pressure is evenly distributed over the inner side of the alveolar processes, and in the upper jaw the hard palate also gives support. Vulcanized retention plates have been used as retainers after the expansion of the arches, and it has been claimed that the incisors and cuspids, by their tendencies of moving lingually and by their lingually sloping surfaces, should dislocate the plate. This has not been the case, so far as I have observed, because the plate is held firmly in place, first, by adhesion to the mucous membrane; secondly, by the pressure of the tongue, and thirdly, by the lower incisors which support it during occlusion.

Next we should consider the external acting forces upon the arches, such as the labial and buccinator muscles. The pressure which these muscles exert, although comparatively slight, nevertheless seems to be enough to prevent the teeth from moving labially or buccally, and assists in holding the teeth firmly in their respective places in the plate. We must here remember that the lingual pressure of the tongue is eliminated by the plate. In stability and strength I would like to compare this com-

bination of support and pressure with a half band, accomplishing stationary anchorage of each individual tooth in its new position.

If cases where mesial or distal occlusion has been treated so as to become normal, and are retained with vulcanite plates, it seems to me as though we secured a stationary anchorage, by means of these plates, not only of single teeth, but also of the arches and the alveolar processes, and that this theory is right has been clinically demonstrated in my practice. In order that a mesial or distal displacement of the teeth should take place, they must first move out of the grasp of the plate. As before mentioned, the force or pressure of the muscles and a well-established interdigitation and interlocking of cusps prevent this movement.

On account of the well-fitting grasps or support, which the teeth have of the plate, they are not disturbed by unfavorable existing forces outward or inward; neither is any tooth exposed to lateral pressure from any one of its neighbors.

Each tooth has just the space which it needs, and the ossification of the alveolar processes can take place without any disturbing elements, a guarantee for permanency of harmony and balance between the arches being reached in the shortest time possible.

In Cases of Class II, which include mouth-breathers, and where there has been considerable protrusion, I have, so far, found this method to be effective. In these cases we must regard the pressure caused by the tongue against the anterior teeth, and especially against the lingual side of the alveolar process, as an important factor tending to push the teeth out into their old position. This pressure is now evenly distributed in all directions by the plate, and the pressure of the upper lip seems to be enough to counterbalance the tendency of the teeth to move forward. We must here, of course, suppose that normal breathing has been established and maintained.

Method of Treating Class II.

My method of treating cases of Class II is as follows: Before the case is ready for retention, normal occlusion is, of course, established, and the regulating appliances have been allowed to remain on for some time in order to steady the teeth and give more stability to the arches. The cusps of the molars and bicuspids should interlock as closely as possible.

The intermaxillary force has been applied for so long a time that the reciprocal moving of the arches and processes have gone so far as to exclude the *directing* of the lower jaw back into distal occlusion. My own opinion is, that if we try to correct a distal occlusion by only pushing or drawing the lower jaw forward and, so to say, lock it into a more mesial position by having the condyloid process rest on a point forward of its

normal position in the *fossa mandibularis,* undoubtedly the muscles of mastication will continually tend to draw the lower jaw back into the old position. I can not comprehend that a permanent retention can be established in this way. Therefore, I deem it necessary to have the intermaxillary, and in some cases of extreme protrusion also the occipital force applied for so long a time as to have the attained normal occlusion, so to say, conjoin with the normal articulation in the maxillary joint, and the normal position of the muscles. When normal occlusion is attained the intermaxillary force is gradually reduced. After some time the conditions in the alveolar process will have settled enough, so as to enable us to remove the intermaxillary bands without fearing any disturbance of the occlusion.

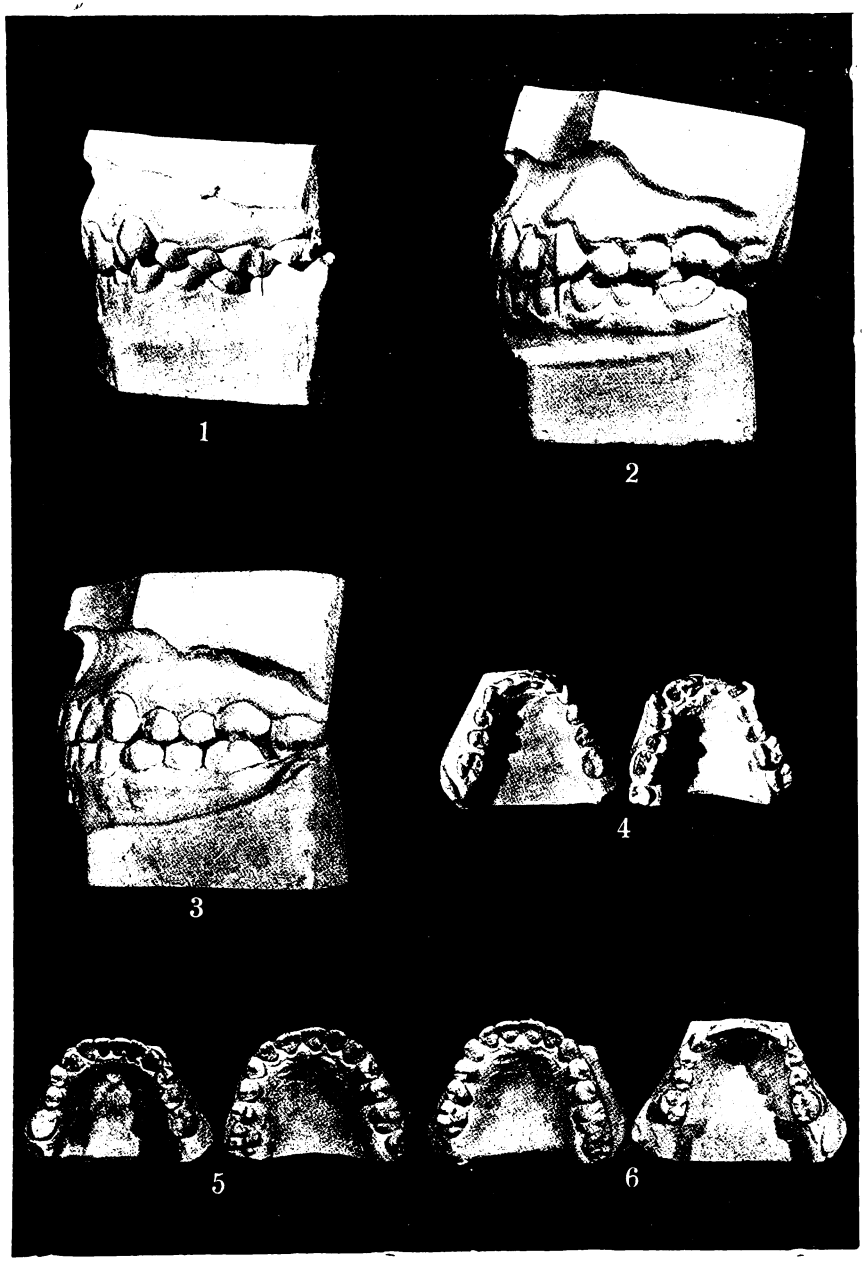
If, after four or six weeks or longer (depending on the case and upon the age of the patient), we find that the support of the regulating arches, to which the teeth are ligated, is sufficient to sustain the new occlusion, then the time has come when arches and bands can be removed. Teeth considerably rotated are retained in the usual manner with bands and spurs. These are first cemented on, and then the retention plates are made and inserted. Impressions for these plates are taken in plaster, correct casts made, and on these the plates are vulcanized in black rubber. The upper plate is reinforced in the posterior part with a German silver wire. The lower plate is reinforced with a wire throughout the entire arch. The ends of this wire are bent so as to form hooks which fit into the lingual grooves of the first molars, thus supporting, and preventing, the posterior part of the plate from being pushed or pressed down out of position.

In the beginning it may be a safe policy to let the patient wear the plates both day and night, but after a short time it is sufficient if they are worn during daytime only. Concerning the question of how long a time the plates should be worn, I would say that this must be left to the operator's own judgment, and should depend upon the case and the age of the patient. These very simple retention apparatuses cause the patients very little inconvenience, and in a short time they become so accustomed to the plates that they even forget all about them.

After having worn the regulating appliances for so long a time, it is quite a relief to the patients that the teeth can be retained in their new positions without unsightly devices, such as bars, bands, etc., not to mention the pain and inconvenience we cause them by fitting new apparatuses.

Objections to Removable Retainers.

Some will say that the retention plate is objectionable, because the patient himself can remove or wear it at will, and that good results will depend mainly upon the patient's conscientiousness. To this we can reply, that an individual who has taken the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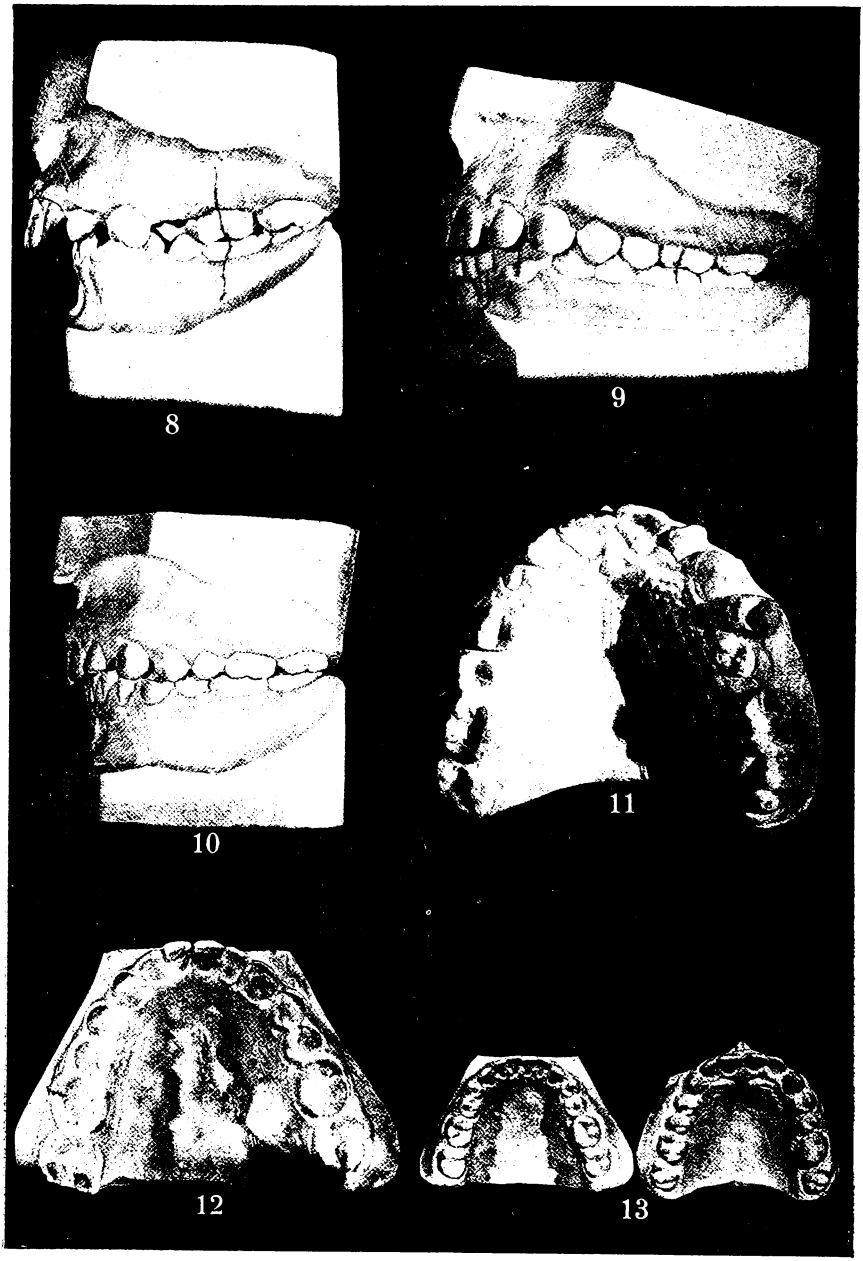
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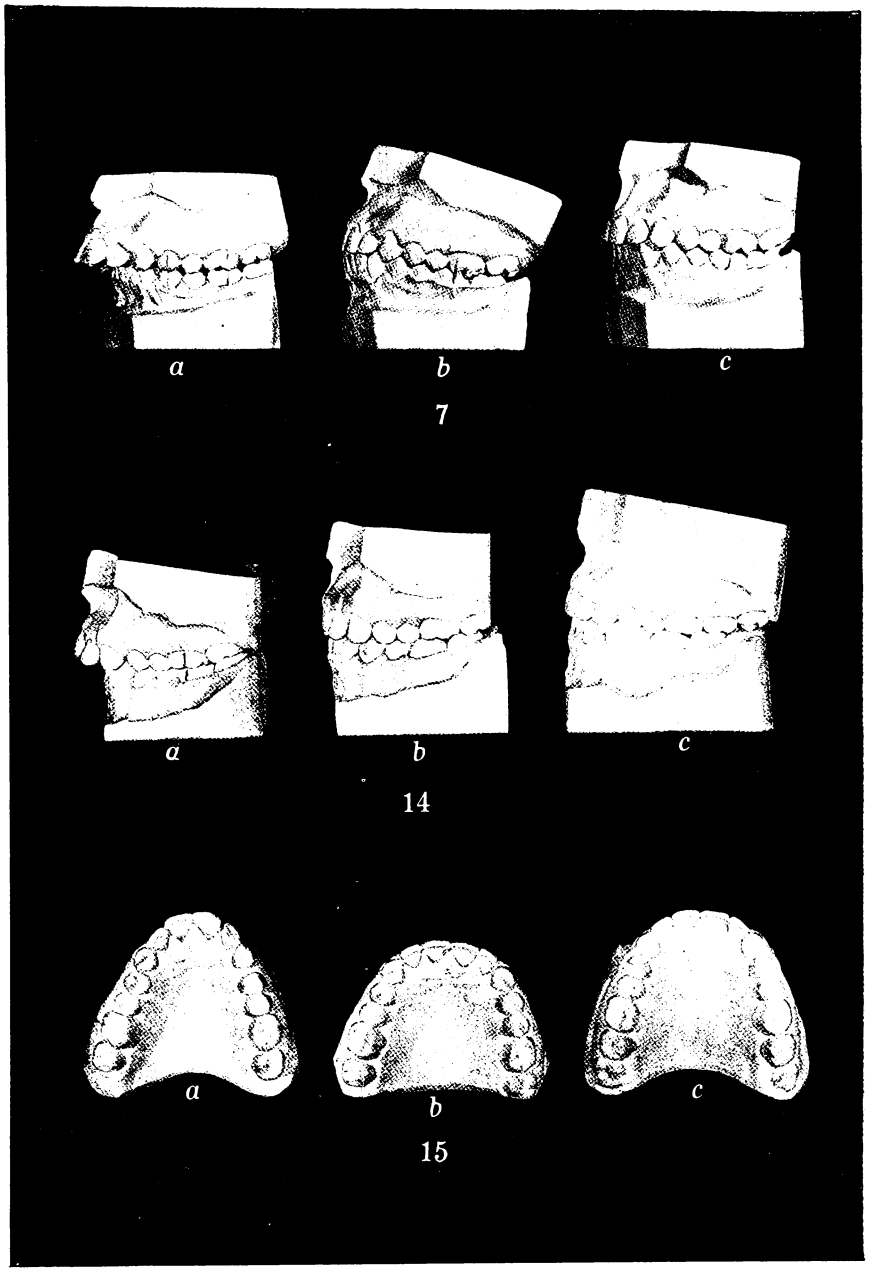
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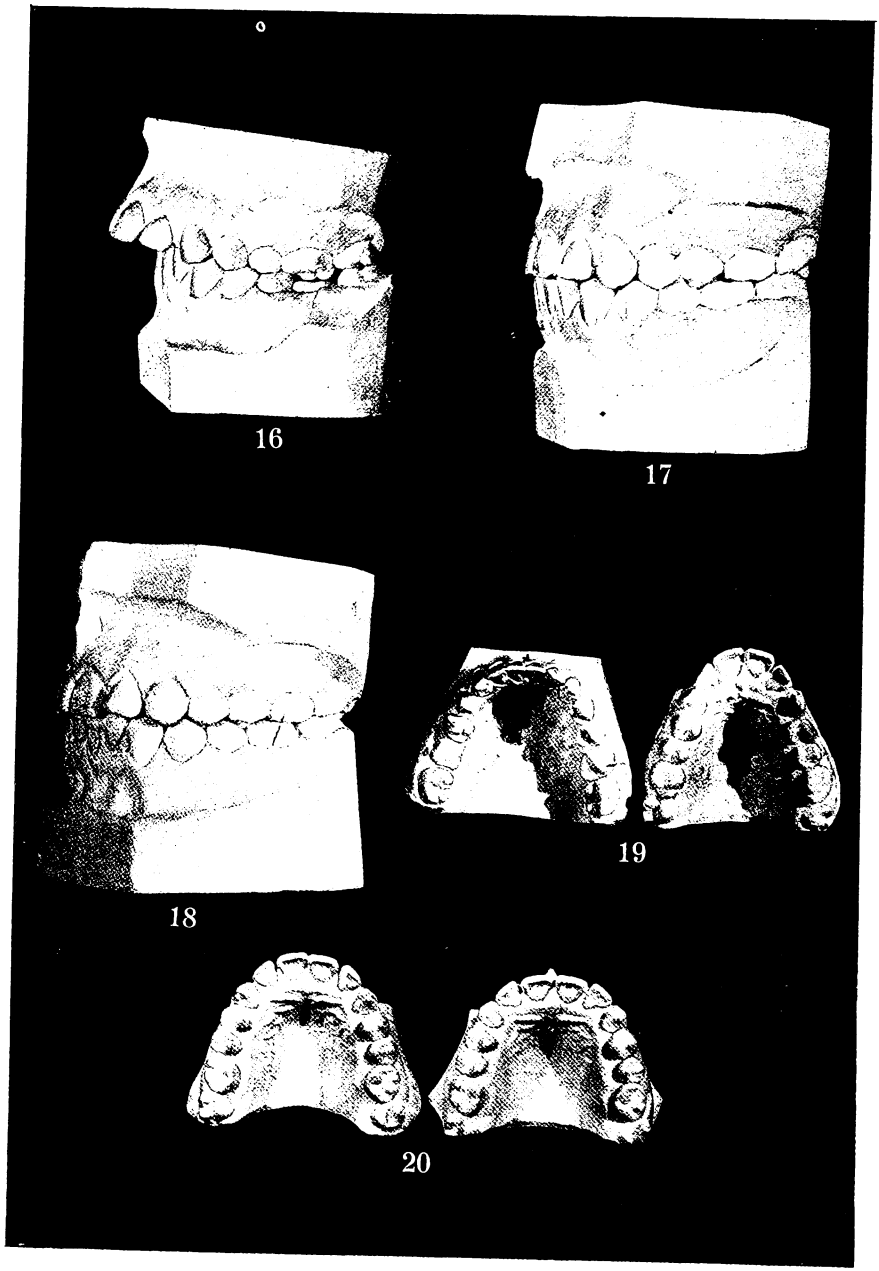

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trouble to go through such a long, tedious, painful and expensive treatment, should, for his own sake, take so much interest in the case as to assist in attaining good results.

When the parents also are taught that the wearing of the retention plates is an unconditional stipulation for the success of the treatment, we can pretty safely suppose that there are few who will neglect these instructions.

The patient should also be instructed to call at the office at certain intervals, in order that the operator need not lose control over the case, and that he may convince himself that all is as it should be.

Another objection raised against retention plates is that they may cause caries upon the teeth or surfaces of teeth in contact with the plate. To speak from my own experience, I should say that the danger is, at least here, exaggerated, because during the time the regulating appliances are worn the patient has acquired a habit of, not to say a craving for, cleanliness in the mouth, and, as a result of this, the teeth and plates are kept scrupulously clean. Under these conditions there need not be much fear of caries.

The period of time in which I have tried, and also succeeded, in retaining normal occlusion of cases of Class II with these simple means, is, perhaps, too short, and cases completed comparatively too few as yet, for me to state that this mode of treatment may be, in all and every case, a fully reliable method. The very satisfactory results which, up to date, I have attained, entitle me, perhaps, even at this early period, to present this paper, and if I have in any way contributed to the solving of the retention problem, I am more than satisfied.

Fig. 1. Shows the occlusion of a girl fifteen years of age. Class II, Div. II.

Fig. 2. Same case after eleven months of treatment. At this time the retention plates were made and inserted.

Fig. 3. Same case twenty-one and a half months after insertion of plates.

Fig. 4. Same case at the beginning of treatment.

Fig. 5. Same case when finished.

Fig. 6. Same case twenty-one months later.

Fig. 7. Shows a case of Class II, Div. I. Girl fourteen years old. Fig. A, at the beginning of treatment. Fig. B, twenty-one months later, at the finish of the case. Here is an end-to-end bite on the anterior teeth. In order to give the lower teeth, which were somewhat spread apart, a chance to move backward and closer together, and thus obtain normal overbite, the lower plate was reduced by filing, corresponding to the

lingual surfaces of the anterior teeth. Fig. C shows the case fourteen months later.

Fig. 8. Shows a case, Class II, Div. I. Girl twelve years of age.

Fig. 9. Same case thirteen months later.

Fig. 10. Same case. Retention plates worn two years and a half.

Figs. 11 and 12. Same case before beginning treatment.

Fig. 13. Same case and same models as in Fig. 10. The upper left bicuspids have been rotated, and are retained with bands soldered together and cemented on. The lateral and central on the left side are retained by bands and a spur.

Fig. 14. Case belonging to Class II, Div. 1. Girl fifteen years of age. Fig. A, at beginning of treatment. Fig. B, fifteen months and a half later. Fig. C, same case when plates have been worn a year and a half.

Fig. 15. Same case. Figs. A, B, C, show the upper jaw at corresponding periods.

Fig. 16. Case of Class II, Div. I. Girl fourteen years old.

Fig. 17. Same case eleven months later when the retention plates were inserted.

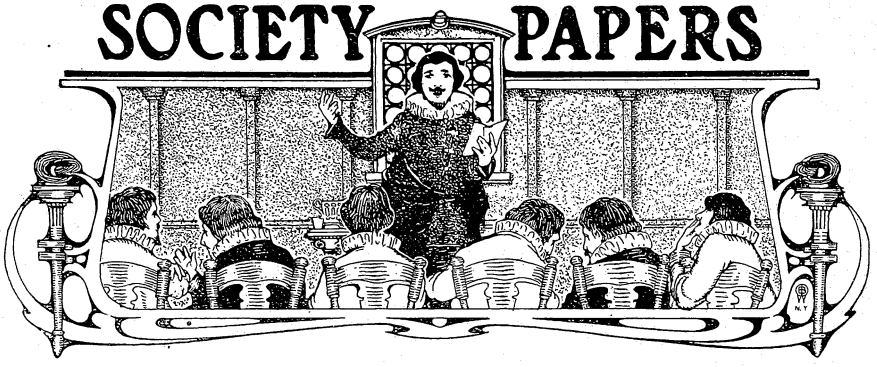
Fig. 18. Same case when retention plates have been worn twelve months.

Fig. 19. Same case at the beginning of treatment.

Fig. 20. Same case. Fig. A, treatment finished. Fig. B, one year later.

NOTE.—Fig. 7 has been placed between Figs. 13 and 14.

SOCIETY PAPERS



Public Oral Hygiene Meeting.

Held Under the Auspices of the Second District Dental Society, March, 1911.

A meeting, under the auspices of the Second District Dental Society of the State of New York, was held in the Music Hall of the Academy of Music, Brooklyn, N. Y., on Monday evening, March 27, 1911. Dr. R. Ottolengui acted as chairman of the meeting, and the subject of the evening was: "Public School Dental Clinics and Training Schools for Dental Nurses."

Dr. Ottolengui. Ladies and Gentlemen.—I hardly know how to begin, but I think I ought to begin with an expression of deep gratitude to those of you who are here. The weather has literally thrown cold water on our enterprise to-night. We had hoped to have this hall packed with people, because we have some facts of importance to this community to be presented by gentlemen who are so capable of presenting them, that every one who has a child, or who loves a child, should have been present to hear their messages; and I believe that those who did come in this great storm will be repaid for coming.

In behalf of the Second District Dental Society, we felt so regretful that the weather had interfered with our arrangements and caused such a small attendance, that we were almost prepared to offer our apologies to Dr. Evans, and excuse him from addressing you; but he very kindly informed me that it is quality that he likes to talk to rather than quantity, and consequently we will proceed. If we can just bear in mind the subject matter, a great good may come out of this meeting.

I will introduce to you at once the first speaker, who is the Commissioner of Public Health of the City of Chicago—Dr. Evans.

Dr. W. A. Evans, Chicago.

I have been engaged in Health Department work now for four years. Prior to that time I had been working in public education along health lines, although not in an official capacity. It has seemed to me a part of my duty to educate and interest the people in health. It has seemed to me that if we were to make headway it would be by reason of the fact that the people must be interested in their own welfare, and willing to stand behind any movement made for that welfare. It is far more easy to see the things that are of immediate interest than it is to understand those things that concern us but indirectly. It is difficult to make the people understand the relationship that exists between bad housing and bad hygiene, and consumption. It is far more difficult to make them understand that there is a definite importance that attaches to the child that has been neglected, and that when we fail to pay proper attention to the welfare of that child we are leaving unpaid items of interest, and items of debit that will gain with the years, and that will leave a heavier burden upon society by reason of the neglect; that the parent who is not duly thoughtful of the physical welfare of his child is not only not shielding his child, but is piling up a burden on society that eventually must be carried by the citizens who, at the time when the questions first arose, were the children of the community.

It is difficult to make the community understand these several things, and recognizing this fact, it has not been a source of discouragement to me when audiences before whom I have appeared have been small in number; nor has the size of the audience been any gauge of the result that was to come from that meeting.

A Large Meeting With Small Results.

Five or six years ago, in one week, I spoke before two labor unions on the subject of consumption. I went to the Paper Hangers' and Painters' Local, and found one of the most enthusiastic audiences that I have ever addressed. The room was jammed with laboring men, and they were vitally interested in the question of consumption in relation to their trade. They were greatly surprised to find that their trade did not have the highest consumption rate, and I am going to digress long enough to tell you why this is. There are sixteen trades with a death rate from consumption that is higher than the death rate of paper hangers and painters. They were surprised, because they thought a business in which they were subjected to odors as foul and as disagreeable and offensive as the odors of the paint business would necessarily be a business in which there was a high death rate from consumption.

The reason for their security lay in this: The odors, the stinks of

the painting, created conditions which it was possible to remedy by opening the windows; and in opening the windows to get rid of the offensiveness, they were bringing about a cure of those conditions. Not infrequently the minor ills that concern us are responsible for ultimate benefits. That has a bearing on the subject which we are to discuss here this evening.

One of the reasons that neglected teeth have been allowed to remain neglected as long as they have, and one of the reasons why there are so many jaws that are defective, and bodies that are ill-nourished, lies in the fact that teeth that are decaying do not manifest their disagreeable features as much as it is for the welfare of man that they should. We are lucky, therefore, when we have the toothache. Probably that is a point of view that you have never taken before, or no one has ever taken in your presence before.

In spite of this very enthusiastic meeting of the Paper Hangers' and Painters' Union, for years I could see no effect that came from that evening's work in the presence of that group of enthusiastic men; and as I have told this story in the years that have passed, I have commonly said that out of that meeting of great enthusiasm there flowed no demonstrable good.

A Small Meeting With Large Results.

On the other hand, within that same week, I went to a meeting of the Brass Polishers' Union. After waiting some time in the saloon below, I was told they were ready for me to do my turn. I went upstairs, and found a man in his shirt-sleeves sitting at a desk. Without getting up, and with no ceremony whatever, he said: "Fellers, here's a man that wants to tell you something." I spoke my speech, and went away perfectly impressed with the fact that my evening had been wasted.

It was not long, however, before that group of officers came over to see me, and said to me: "You say consumption can be cured. Here is a member of our union who has got consumption; let's see you cure him." We sent him to a sanitarium, and he recovered from his disease, and one of the effects of that speech was that in the Department of Health during the last four years there has been no more active and effective support given that department than that which has come from this union of brass polishers,—from a meeting that seemed to offer so little hope.

As I have told the story of the paper hangers, I have usually said that nothing came from that meeting—a large, enthusiastic one—and yet after the expiration of six years, there has just come out a report from that Union on the subject of the health dangers of their trade. That shows that these people, though quiescent, have been thinking during

those years. Therefore you cannot conclude, ladies and gentlemen, from the numbers at a meeting, or from any outward manifestation, just what is to be the result.

Relation Between Teeth and Public Health.

We are here to-night to discuss the question of teeth—the relation between teeth and public health, and to consider either here or elsewhere what is to be done toward remedying the conditions which a study demonstrates to be the conditions. The importance of teeth from the standpoint of public health is great, and that importance is as the result of several groups of factors. An important element in this is the element of infection.

It has not been long since it was held that a considerable part of infection was air borne, that there was possibility of transmission of certain types of infection brought for a considerable distance through the air. The tendency of these recent times is to show that an intimate contact is necessary for the spread of infection. This development, this evolution from the vague into the definite, is shown in several ways.

Heredity and Environment.

It has not been long since a man who had an illness was accustomed to ascribe the responsibility for that illness to his parent, to inherited influence rather than to environmental influence; and a certain part of this is correct and scientifically accurate; and yet there has been a shifting of responsibility in this direction that was not warranted by the facts. We have been accustomed to believing that when a man developed consumption, it was by reason of an inheritance from some ancestor, or some line of ancestry; and now we know that taking the subject in the large, that considering it in its several relations, the statement holds true that the man who has consumption has earned it for himself—has earned it by living wrongly, or by close association with those who live wrongly.

Diphtheria.

We are now believing that so far as diphtheria and measles and scarlet fever are concerned, it requires close contact for the transmission of these diseases; that the contact must be close between a susceptible individual and some one who is capable of spreading the disease.

The difficulty in arriving at an accurate conclusion on this point has been intensified by a belief that no one could spread contagion save a person who had that contagious disease in a typical way. It has been easier to work out these different relationships, as we have come to understand that there is but a small percentage of people who have diseases of this type, who have them in a typical way.

A number of years ago a Frenchman said: "It is the patient who makes the disease." These bacterial diseases represent a compromise between factors that are contributed by the patient; and to the symptom complex that we call, let us say, diphtheria, there is a certain part that represents the contribution of the diphtheria bacillus. There is a larger part, however, of that symptom complex that represents the contribution of the patient, and as patients differ greatly, it follows that they differ greatly in the product of the diphtheria bacillus.

It means that the same bacillus in one patient would give a disease called diphtheria, in which there would be a certain line of symptoms, and in another patient would give a disease called diphtheria in which there would be a considerable departure from the symptoms in the other case; and the differences are represented by the differences in the hosts —in the people having the disease.

The Spread of Contagious Diseases.

In addition to those that have these diseases atypically, there is another group—those that bear the contagion of disease themselves, who are capable of spreading it, but at the same time are not sick themselves. Nature's preferred method of controlling these bacterial diseases is by habituation, first by changing the bacterium and being changed by the bacterium, so that the patient and the bacterium, the host and the parasite, live side by side, habituated each to the other.

In the great economy of forces, that is the method that Nature prefers for solving these questions; but men are brought in contact with disease bacteria at times that do not make it possible for this habituation to occur; and under these exceptional circumstances the way this thing is fought out is through a battle. Instead of taking time for the gradual accomplishment of habituation, there is a sudden onset of a sharp contact and a short disease, after which the man is permanently changed, and the proof of it is the fact that he is no longer subject to that disease; and the bacillus is changed by passing through man just as the man is changed.

The meaning of all that is this: We get into our bodies disease germs that are not producing disease in us, but that are capable of producing disease in those with whom we come in contact.

The human body is not a government—it is a community. It is a community that is made up of sub-groups, and those sub-groups we call liver and lungs and kidneys and other organs, and those groups in turn are made up of individuals, and the individuals that make up these groups are the cells of the body. There are certain places in the human body where infection is not liable to lurk. There are other places where there is a possibility that infection will occur, and where bacterial infection will

lurk, and very much the most important is the first portion of the alimentary tract—the nose, the mouth, the tonsils, and more of these infections occur through the mouth, the nasal pharynx, the tonsils and around the teeth than through all other parts of the body combined.

Therefore the child that has a neglected mouth, that has creases in the tonsils or recesses in the folds of the naso-pharynx; that has teeth around which dirt is accumulating, and cavities in his teeth, which are receptacles for bacteria, is not only a conveyor of filth, but is in a large proportion of instances a conveyor of these diseases that represent so large a part of the disease group of childhood—diphtheria, scarlet fever and measles, representing infections that have come through the mouth very much more than through any other channel. Though the child that contracts diphtheria may have contracted it from a developed diphtheria, the number of children that have contracted diphtheria in that way represents but a relatively small part of the children that have contracted diphtheria. Why? The child that is manifestly sick with diphtheria is guarded in some measure by the community, and in considerable measure by its family associates. In consequence of that fact, that child is not much of a community menace.

The child, however, that is in the greatest measure a community menace is the child that has diphtheria germs in the throat and around the teeth—in tooth cavities that are capable of spreading the disease. These cases are not guarded, and the bacteria can easily be conveyed to others.

Remember that these diseases do not develop in any considerable measure outside of human bodies; and if the human hosts, therefore, of diphtheria, scarlet fever and measles were eliminated—if there were no possibility for a matter of weeks of keeping alive these germs inside human bodies—these diseases would be banished from the category of diseases of society.

Neglected teeth are of consequence from other standpoints—from standpoints that probably it is more difficult for us to understand than these that have been included.

Importance of School Inspection.

The medical inspection of school children generally begins by an inspection of those children for contagion. It is easy even for the unthinking to see that in the schoolroom, where some thousands of children are gathered in close contact for about seven hours a day, children gathered from some several hundred separate homes, in different strata of society—homes where conditions are hygienic, and homes where the conditions are unhygienic—there is possibility of the spread of contagion in such an assemblage, and that therefore there would be gain by

taking advantage of this coming together to inspect those children for manifestations of uncleanliness and disease.

It requires much intelligence to understand that consumption in a community, or amongst a group of people, is not a visitation of Providence; that it does not represent the wrath of God, but that it represents wrong living; that it represents a continuous earning of that disease on the part of the community; that there can be no surcease of this disease until there is such a change in the methods of living that freedom has been earned by the community.

It requires more intelligence for a community to understand that children that are neglected, and that go through the years uncared for, in time come to represent a community menace; that they represent a lack of efficiency on the part of the school system; that the children cannot advance as rapidly as they should, and in consequence some part of the great educational machinery of the community is not working 100% perfect, or returning 100% of results.

In addition to all of that, these children grow up and go out into the community, and it requires intelligence to understand how they themselves, now become men and women, constitute a community menace.

Relation of Teeth to Public Health.

Now, how is it that teeth that are neglected, teeth that contain cavities, teeth that cannot properly masticate the food, are responsible for ill-developed men and women? These are some of the ways in which it works out: In the first place, there is never another time in the history of an individual when his physical welfare is quite so important to him, and indirectly to the community, as in childhood. A man grown to maturity needs only nourishment enough taken from his food to maintain his bodily weight and to furnish something for the day's work. The child, on the other hand, is required not only to do a full day's work, but is required to add to his stature; is required to do the hardest kind of chemical labor; to take the lowly organized chemical elements and build them up into the higher chemical compounds; to take nitrogen and hydrogen and carbon, and similar substances, and to build them up into brain and bone and sinew and muscle. It requires strenuous labor on the part of some cells that are laboring somewhere in the interior of that child.

Suppose, for instance, a man were confronted with the necessity of increasing his weight 100% within a year; suppose a woman weighing one hundred pounds was told by this time next year she was required to weigh two hundred pounds. She would have to work hard, and work overtime, in order to accomplish that feat.

The child has something more to do than that even, for he must take

such material as comes to his hand, and it must be made not into the single compound, fat, but into the more highly organized and specialized and different compounds that go to make up brain and muscle and body tissue.

By reason of all these facts, the ability to masticate properly, the ability to properly prepare the food for distribution, for assimilation, is very much more important in the years of childhood than it is at any subsequent period.

I know you have all seen men around the table carving the meat for the family circle, and the husband generally gets the choice cut, the wife the second best portion, and the children take what is left. Now a really proper regard for the proportions, for the different demands, would mean that those children should get the most nutritious cuts, since they have exercise to take, since they have muscle manufacture to compensate for, since they have work to do, and in addition have to do this great work of building up their bodies.

There are stones in a structure that differ in importance, according to the position they occupy in that structure, and that which I wish to submit here is this: That the most important stone of all is the foundation stone, the corner-stone, and that the cap-stone high on the top, that represents the ultimate development, that stone upon which but little, or nothing, rests, is of small importance, as compared with the stones down yonder at the bottom, on which the structure is to be built; and the lesson we learn from that is this: That the most important time in the physical development of the individual is that time when the child is building up his bone and his sinews and his organs into the structure of his adult body. These are the foundation years of his existence, and that body neglected at that time means that there will be crookedness in the wall that is built upon. The wall that is improperly placed, and the structure built thereafter, is never a proper structure, however careful the subsequent building may be.

The children, then, who are holding in their mouths teeth that are decayed, and in consequence of which they cannot properly masticate their food, are not building up bodies that represent the best, and which we have a right to ask of our men and our women.

How is this a consequence from the community standpoint? There is no law on your statute book that represents the ideal. The best of your lawmakers are compromising between things as they should be and things as they can be done, and therefore the most idealistic of your laws are laws that represent these compromises; and I say to you that the neglected men and women in your community, who have grown up as neglected children in the community, more largely gauge the laws of your

community than do the more idealistic members of your community. The men and women of this type are influencing the growth of this child, are making for the material welfare or against the material welfare of the community. Further than this, there is no administration that is ideal. Every man of administrative experience represents those in the community. There is an administrator that would represent the best for the community—he would like to give it to you, but the community as a whole is not ready for it. That administration is tinctured, is colored, in great measure by the point of view of the members of society that have grown up from these neglected children.

More than this, our laws in great measure are determined by judicial decision; and I say to you that judicial decision is a reflection in turn of the community point of view. That community point of view which is reflected is not the ideal community point of view. It is a compromise between the ideal and community responsibility, the relation of individual to individual as it is understood by these men that have grown up from neglected boys and girls.

The Dullard a Clog to the Whole Class.

This community cannot afford to neglect its children. It is responsible for monetary loss immediately in this. The rapidity with which children progress in school is not determined by those that progress most rapidly. It represents a compromise between the brighter members of the class and those that are less bright. The dullards, therefore, in a class, are responsible for the rate of progress of all of the students in the schoolroom; they make it longer for a boy to get through the curriculum. They decrease the number of things that can be covered in a given school curriculum, and in that way make it impossible for the brighter boy to accomplish as much as he would otherwise, and this is expensive to the community. A fair percentage of children each year do not go through from one grade to the grade next above. There is no accident in this.

A number of years ago, one of our brightest school inspectors took up with a school principal the question of the laggards in the schoolroom. He said to this gentleman: "I can go through this schoolroom and pick out the bright boys, and pick out those that are dull, and those that learn and those that cannot learn." And the principal said: "Let's see you try." He said: "This one can learn fast, and that one can learn slowly, and that one is a dummy." "That is true; you have picked them out," said the principal. "How did you do it?" He said: "I did it in this way. That boy on my left is badly nourished, has enlarged glands, has adenoids, has bad teeth. I know that the boy that has a physique that is bad, a badly developed body, blood that is pale and teeth that are poor,

cannot properly study. He cannot concentrate his attention, and he is failing in his classes, not by reason of the fact that he is in such mediocre health, but by reason of the fact that his physique cannot properly support his mind." And all that was true.

What was true of that group of pupils is true of the great mass of pupils that go to make up the student body in the city of Brooklyn. What it is proposed shall be done, is that it should not be neglected longer, and it is not to the interests of the dental profession that it should be neglected longer. In the first place, a lack of dental work makes against dental work, and the best incentive to good dental work is good teeth. A pupil with teeth that are clean makes for a desire for clean teeth on the part of the other children of the schoolroom. A child that is clear-eyed and rosy-cheeked makes for the physical development and for the better health of other children that are in that schoolroom.

Second District Society's Plan.

The plan this Second District Dental Society proposes is that in one of their schools there shall be established a dental clinic; that this dental clinic is not to subserve the ordinary purposes of dental clinics, in that they are to practice the filling of cavities in the teeth of the subjects, but rather that this dental clinic is to teach cleanliness and care of the teeth in that school, to the end that the children there may have clean teeth, and that this in turn may mean a decrease in the number of cavities in the teeth of those children.

Furthermore, that the influence of this group of children, with teeth that are clean and teeth that are free from cavities, will have value upon the other children of the city of Brooklyn. Furthermore, that there shall be trained in this school a group of instructors who cannot receive such training in ordinary ways—a group of nurses capable of caring for teeth, and that these may spread out and become foci, from which this influence may radiate to others. It is worth while from the standpoint of this group of women that it is proposed to train. It is worth while from the standpoint of the dental profession. It is worth while from the standpoint of the community at this immediate time. It is, however, infinitely more worth while from the standpoint of the community that is to come after, since our problems neglected, our debts unpaid, are not wiped off; they lie there, they accumulate with the ages, and they roll back as an additional burden upon the shoulders of our children.

Dr. Ottolengui.

Ladies and Gentlemen.—I am glad that in the closing of his speech Dr. Evans alluded to the experiment which we wish to try in this city. The purpose of this meeting was not only to give you this message, but also, if possible, to induce you to aid in this movement. I am not a busi-

ness man, being only a dentist; and any dentist will tell you that dentists are not business men; but my brother is a business man, and he told me something once, which I know to be a truth now. He told me that with $1,000 he could raise any sum of money required for a proper enterprise, and I asked why and how. "Well," he said, "with $1,000 and my enterprise, I can induce another man to have the same enthusiasm and to put up $1,000; and then with $2,000 I can induce some one to put up $2,000 more, and so on." He told me that a good many years ago, and recently he has put it into effect, and has started an enterprise himself, starting with two or three thousand, and raising a hundred thousand.

So it is important, in spite of the size of this audience, that we do get a nest-egg here to-night, even if it is only half of the $15,000 which we need; and while you are thinking of money, and Dr. Darlington is telling you of our city, suppose you think how much you are going to subscribe to this fund before you leave, because it is not going to rain in Brooklyn all the time, and we can have another meeting, and it would be a great thing to say that we so impressed this audience that they gave us $5,000 out of hand, and with the hall full at our next meeting we will get the other $10,000.

I take great pleasure in introducing Dr. Darlington.

Dr. Thomas Darlington, New York.

Mr. Chairman, ladies and gentlemen.—I am always glad of an opportunity to bring matters of this kind to public attention, because, after all, what we really need is to have the public wake up to existing conditions, and I feel sure that they will remedy themselves.

I have always felt that if the farmer really knew that when he did not scald his pail and did not wash his hands he was probably causing the death of a child in the city, he would wash his hands and scald the pail. It is lack of information very largely.

We have heard much in the newspapers of the conservation of our coal fields, conservation of forests, and so on, but little is said of conservation of human life, and to conserve it we must commence with the children.

The science of hygiene put in a nutshell really means the conservation of human life, the relief of physical suffering, the making for happiness, the prolongation of life. Longevity depends very largely on comparatively few things. One of the most important factors in producing longevity is the question of relieving intestinal toxemia. I heard a man tell his children, "You dig your graves with your teeth." They eat too much, or do not eat properly. That is largely true, but many of our ills are due to absorption of toxins, poisons which are formed in the intestinal tract. The food becomes putrid in the main tracts, and that

fermentation is absorbed in the system. How do the germs get there? Well, very largely, we will say, in milk, from having manure mixed in it, and things getting into it from the outside. But why not sterilize all milk, Pasteurize all milk? Well, when that is done, and you give it to the ordinary child to drink, what happens? Thirty or forty kinds of bacteria immediately get mixed with the milk in the mouth, and go down into the stomach. If the stomach is in good condition, and the quarantine is there, that stops it; but with very many it is not there. It seems almost useless to be so careful about the food, and then immediately mix it with the bacteria in the mouth.

I brought over a little book on bacteria of the mouth, and while it is not perfect, and they have not found all the kinds of bacteria, I was counting them up, and I found that this book, published in 1902, mentions forty-five kinds. The writer probably did not get them all, because when they make cultures from the mouth they rinse the mouth out with water, and make the cultures on plates, and many will not develop on plates. But it seems that forty-five different kinds are almost sufficient, and these are held there, so that the mouth cannot be properly disinfected when there are decayed teeth.

Examination of New York School Children.

In 1910 the examinations of school children in the city of New York physically was 266,426. Of these there were nearly 200,000 with decayed teeth in the greater city. Now that does not mean all the little cavities, for I have not the slightest doubt but that about 99% of the children have something the matter with the teeth; but these were the ones which a physician thought needed to go to a dentist. Had they been examined by a dentist, don't you suppose they would have found a great many more?

For the 63,000 plus in Brooklyn, there were 2,562 extractions and 315 that were filled. That is all. In the greater city there were 15,197 that had fillings, and 10,978 that had teeth extracted. The Department of Health issues circulars which are given to the children, and taken to the houses. These circulars are instructions to parents regarding the care of the health of the children; also some instructions with regard to the decay of the teeth. The teeth decay, and diseases of the gums may result. Neglect of the first teeth is frequently the cause of the decay of second teeth. If a child has decayed teeth, it cannot properly chew its food, which in turn causes bad digestion, and consequently poor health. If a child is not in good health, it cannot keep up with its classes, and it has not the proper chance to grow into a robust, healthy adult. If the child's teeth are decayed, it should be taken to a dentist at once. But there are a great many that cannot afford to go to a dentist. How many really

absorb that circular? How many circulars do you have to give in a single family before they take it in and really have something done for the child? Are not these facts of the treatment significant even after the child has been examined? It is not only a question of the future health of the child, but there is the question of economy. We are all talking about taxes. Every year the taxes go up over ten million dollars, and we are wondering where it will end. It does not make any difference whether a person rents a house, or owns one, he has to pay taxes any way in the rent, and we are finding it a burden. Can we not lessen some of this expense to the city? It seems to me we can.

The Cost of Educating Laggards.

Take one illustration, the first question that came up to me when I went into the Department of Health. I found that 65,000 children had been excluded from the different schools, due to some physical defect or contagious disease. That meant that they were absent perhaps a week, or longer, and that they got behind in the class, and that 50,000 at least, during my jurisdiction, were not promoted in school. Now, as a matter of fact, all the children desire to graduate at the public school, particularly those of poor families, because to get a labor certificate they must have so many days of school, and must be of a certain age. It is desirable that they should be advanced as rapidly as possible, and they continue to go to school.

It costs in round numbers $50 a year to educate a child in the city of New York—$43 for the expense of the elemental outlay, and the rest for the teacher. If 50,000 children were not promoted, it means $50 more a year for each one of those children. That is nearly $3,000,000 extra to be paid, and that is added to the taxes.

In four years of work with nurses in the public schools we reduced that number from 65,000 to 8,000 exclusions. In other words, 57,000 children were saved for promotion, and if they were promoted, as we take it for granted they were, there was a saving of $2,500,000 to the taxpayers in this city.

That is a simple problem in economy, but there is something more than that. Two years ago, 241,000 children failed in their examinations. They had to take the same class over again. There are something like 66,000 children on part time. There are not enough schools to give all the time needed. To do this would require 32,000 more seats. That would mean at least sixteen new schoolhouses, costing half a million apiece. A large proportion of these children are not promoted because of physical defects. If all the physical defects of all the children were corrected, the cases of defective eyesight, the large number of defective

teeth, the adenoids and enlarged tonsils taken care of, we could promote at least 60,000 or 70,000 children more out of those 241,000.

If that is true, and we can keep them moving up, there would be no necessity of building any new schoolhouses, and the ten or twelve millions that would be needed for that are not necessary. It is only necessary to spend half a million each year for taking care of the children and fixing up these physical defects, and then we can save the rest. There is no doubt that many children are left back because they sometimes have too many things to study. We know just exactly what the curriculum should be. We differ about it, and some may be left back because of improper methods of teaching. I am not here to criticize that. Of course, the 241,000 left-overs are not all due to physical defects, but I do believe a large proportion are due to that, and we could have the room we need if all these defects were corrected.

Need of Dental Clinics.

The treatment of these defects is important in regard to its effect upon the mastication of the food; for, after all, our strength depends upon the food we digest. It seems to me that this is one of the first things we ought to do, and it is utterly impossible to have these treatments for children unless we have some dental clinics. They are absolutely necessary; we need dental clinics just the same as we need medical clinics. It seems strange to me that with all the endowments of different colleges and libraries everywhere, no one has thought to endow a clinic of that character in this city. It is one of the most necessary things, if we are to have a virile nation in the future.

I think I have shown you sufficient in the economy to make you interested for your own sake, in just the saving of taxes. I wish to read a few sentences from a pamphlet I wrote a short time ago: (Reading from pamphlet.)

"The progress of preventive medicine during these first years of the twentieth century holds forth great promise for the future. The brilliant achievements of sanitary science are regarded with high favor. If we are to build safely and surely for the years to come, we must realize that civilization can never accomplish its aim unless it realizes that the basic principle of illness should be definitely wiped out. We must build from the ground up. The child of to-day will be the man of to-morrow, and the welfare and outcome of our existence as a people rests upon that assurance of physical ability which we can offer to the future."

Saving the children and keeping them healthy is not merely a humanitarian impulse, it is civic and national service of the highest type of patriotic duty.

In New York City, many times appropriations have been asked for

this work, and very frequently they have been refused or lessened. It seems to me that it is necessary for the people themselves to take up the work and continue it. We have had enough experimental work to determine this fully. It is an economic truism that the saving of life and preservation of health offers greater value to the State than can be gained in any other way. Governments must conserve the health of their subjects if they are to insure the future welfare of their citizens, and money, time and energy can be expended in no more worthy purpose.

It is not a question of race suicide. The birth rate in New York is steadily increasing; but of what avail is this, if we do not assure the child the right not only to live, but to possess a degree of continued physical health, which will enable him to meet the world in the scheme of advancing civilization?

Dr. Ottolengui. Ladies and Gentlemen.—The last speaker touched on a very important point when he said that it is a surprise to him that no one had thought of endowing a dental hospital. It may be news to some in the audience to hear that one man in Boston promised one million for a dental hospital, and died after promising to give it. His estates were inherited by his brother, who had not made any such promise, but he inquired into the good that would come of it, and not only gave the million which his brother had promised, but about $100,000 more for the land on which to put the building.

In the city of Rochester the dentists started a dental clinic to show what could be done, and, after showing the community for a little while, they had a public meeting of this kind, and they raised a sufficient sum of money to continue the work, from the audience, from the business men and educational boards of that city.

The State of New Jersey has just passed a law allowing any dental society that will conduct a clinic to draw $5,000 annually from the State treasury for the maintenance of a clinic of this kind.

The United States Government in the closing days of the last Congress, appointed for the District of Columbia, a city which, of course, it governs directly, twelve inspectors for the public schools, of whom two are to be dentists.

Our first speaker of the evening, Dr. Evans, a medical man and a Commissioner of Health, through his efforts has induced the city of Chicago also to appoint an additional inspector for the public schools there, so that this movement already has a footing, and is growing.

All that Dr. Darlington said is true; but, ladies and gentlemen, the people who hold the purse strings of the city are all born in Missouri; they have to be shown.

Now we who have organized this meeting, and who have started this movement, believe if we could carry out our experiment we would not only show our own lawmakers, and our own purseholders that it is positively cheaper to take care of these children than to neglect them; but that the same message would go out all over the land, and within ten or twelve years we would not only have dental clinics in the public schools of this city, but that it would be a part of the plan of every public school building erected in the future, that a medical and dental infirmary should be built into the building, and the children taken care of. That may sound like paternalism in government; but does not the city exercise paternal qualifications when it makes the education of the children compulsory? When it takes the child away from its parents for a certain number of hours each day, during five days in the week?

Now, if they can be paternal enough to take that child away from its home and compel that child to have an education, it is equally the right and duty of the State to guard the environment in which it places that child; to see that it can take that education in safety; that it will neither give nor receive contagious diseases, and we believe we could prove these things if we only had an opportunity to do so.

If we can start our training school and train dental nurses to do this in one school, with two dentists and ten trained dental nurses, we can clean the teeth of 2,000 children once a month, and we would guarantee that none of these children would suffer with unclean mouths or contaminate sterilized milk, or in any other way be a menace to the community. That can all be done, and these women taught and paid, and these dentists paid; and let me tell you there is no work so good as the work that is paid for. All over the country dentists are trying to do this by voluntary service. It should be a paid service. We cannot get that out of the city. We must get it out of the people; but the people will get it back later on, in lessened taxes.

Now we have heard from the medical profession, and we have with us to-night a gentleman who has the unique distinction of having been for years the principal of the largest public school, perhaps, in the world. He is also interested in this work from the standpoint of the public school, and I am going to ask Mr. Jenkins to talk to you, and if I have failed, he will appeal to you to put your hands in your pockets and help this movement.

Mr. H. E. Jenkins. Ladies and Gentlemen.—I heard once of a religious meeting, and they had various speakers, and the original subject for study was lost sight of for the time. They covered every possible field and aim which had ever been thought of, taking up a great deal of time, and tiring one man who

had listened patiently. The last speaker was saying something about the prophet Uriah. He went on at great length, and finally said: "And now we come to the prophet Uriah. Where shall we put him?" Then this tired listener said: "Please, sir, he can have my place; I'm going home to dinner."

These gentlemen have absolutely stolen all the thunder that could be presented, with one or two flashes of lightning thrown in. They have spoken purely from the medical side; I shall speak from a slightly different standpoint.

Education Compulsory.

Free education of our children is most important—the highest function of the State. It is not an individual charity; it is not even a right that an individual may accept or not as he sees fit. It is a vital necessity for the State to so train its body of citizens. That makes it a State, and it forces this education even on the unwilling. The one to be educated has no right to say whether or not he will accept it, and all the children, physically fit or otherwise, are subject to the so-called compulsory education law. This compulsory education law is in the highest degree humanitarian, for it is that principally which will prevent the immature child labor, whose great product is moral and physical so-called citizens, who will become merely hireling voters. This point the compulsory education law is doing away with.

What is this education which is forced on the children? We do not call it education any more, but a higher name. We say the care of children in the public school, for specialized education has moved along three foundation lines—moral, mental and physical. The great emphasis in the past has either been upon the moral, or more principally upon the intellectual side. Within the past fifteen or twenty years attractive new methods of education have been started, setting aside that old practice, making what we call the new education, new care of children, based on the physical.

Better than words can tell you, this is shown in the new school buildings. You see this progress in the various types of buildings. You remember the buildings you and I went to school in. You had old buildings, made subordinate to one idea, the idea of the three "R's." I think there was no particular attention paid to light or to air; no effort made to provide for ventilation, rooms more or less small; any cubby-hole left could be turned into a classroom. The benches were old-fashioned, and not specially suited to any one as to size; all were the same size. The desks were boards that could be pulled over into place. There were no such things as individual desks. There were no playgrounds. The only

place for the children to play was the dark basement under the building, used because it was fit for nothing else.

Modern School Buildings.

Then came the beginning of this wave of improvement, and you got the next type of buildings. Most of the great new school buildings, built from six to twelve years ago, are known as the letter "H" buildings. The ground plan is in the form of the letter "H," and every room in the building has light and air. These are well ventilated, have extensive provision for light and ventilation, individual seats and desks suited to the physical formation of the child. But these buildings had one great difficulty. On two floors the assembly rooms were made, as you know, by the rolling back of big doors, so that about six classrooms could be thrown into one big assembly room. They made six of these on a floor. They made twelve of these to a building.

About four or five years ago that type was abandoned, and the schools being put up now in the last four years are models of architectural beauty, with every convenience, every improvement, and everything is on the physical side. Magnificent playgrounds, roof gardens, basketball, gymnasiums, everything for exercise, because to-day we feel that the body comes first, then the mind; that the physiological must precede and lead the psychological.

Physical Care of Children in School.

Now included with these new types of buildings and this new so-called physical culture unknown fifteen years ago, hardly spoken of ten years ago, are certain physical exercises, most of them taken daily, and even hourly, by every pupil in the school. Every hour of the day, on the even hours, ten, twelve and two, at a certain signal, every window is thrown open, and the children stand and go through a little drill, similar to the West Point drill, and for twenty minutes muscles are exercised and developed, and this drill is of great benefit.

Then comes the organized play. This is all done for the good of the children. Perhaps you will say children do not need to be taught to play; but remember the old-fashioned playground. It was nothing but push and scramble and scrap and fight. Everything in a chaos. To-day you will find the yards crowded with children, all of them under the direction of the teacher, and though they are under this supervision, there is nothing that seems constrained, and yet these several hundred children laugh and play as we think naturally, guided by the teacher.

We have some little jokes made of our dancing; that is, the folk dances which we teach the children; but one of the greatest things of benefit in the line of development of the muscles is the dance. The chil-

dren otherwise would not exercise certain muscles, which it is very important should be exercised. It makes for correct posture also.

West Point for the last forty years has had in its curriculum to be taught to the cadets the art of dancing, and it is looked upon as one of the most important branches of study. It teaches a man how to carry himself, and how to dance, and how to stand properly; and we are doing that for the children.

Medical Inspection.

Then again, in the matter of this medical inspection Dr. Darlington has told you, I believe, he introduced it to the schools. It came in a very small way, about 1903 or 1904. It was made in a very *dilletante* fashion, did not amount to much, and was opposed by everybody, including teachers. It was simply a nuisance to the teacher, when doing good work, to have two or three boys called out of the room. If any child was sent home with something the matter, the parents fought it out with the doctor and objected to the children being kept out of school.

During 1904 and 1905 nearly every principal spent a good portion of the day settling quarrels between the doctor and the parents, in which the doctor was not originally to blame. Since then the inspection has grown step by step. There was not harmony between the educational forces, or the people in charge, and the Board of Health; and results of examinations the Board of Health obtained were not practically available for the schools to use. I should say that about 1908 was practically the first year when there was any value educationally to the school people from the Board of Health inspection. The figures Dr. Darlington gave you differ slightly from mine. Mine come from Dr. Maxwell's report, and probably depend on the difference between the school year and the Board of Health year. The school year begins on the opening day in September and ends on the last day in June—technically the 31st of July. The City Superintendent's report has only been issued three or four months, and consequently, we are almost up to the end of the next year when all the data and figures can be obtained from it. Some of the results and figures struck me the first time I saw them as marvelous. I expected nothing of the kind. These men knew what to expect. I received the first report in my own school. Take the figures of the City Superintendent in his last report—720,000 to 740,000 pupils enrolled in the schools. There is no question but that with proper administration there should be a medical and physical inspection of these children once a year, and in some cases it would be wise to examine twice a year. As a matter of fact, the total number examined in the school year, September, 1909, to January 31, 1910, was, in round numbers, 250,000. Of

these 250,000, 187,000 were found to be defective. Now in glancing over the list of defects you are struck for the first time by a peculiar coincidence. The Board of City Schools has for each child a record card. On one side is his life history as a schoolboy. It commences with his first introduction to the school in 1-A, baby class. On February 1st, 1-A; then next June, if he was a normal pupil, you should see 1-B; the following January, 2-A, and so on the sixteen grades of the school completely followed out, taking eight years. Some bright children skip a grade. But when you look over that card today you perhaps see 1-A twice, 1-B twice, 2-A or 2-B four times. I have seen it. That means he was moving about, as families sometimes do. He was in a school in Brooklyn, and then, the family moving, he first comes to Rivington Street, the lower East Side of New York, stays there a few months, then moves uptown to the streets between 100th and 116th. Inside of a year he moves again, sometimes within four months. The next jump is to Brownsville, and the circle is made over again. Each time he loses something.

In my school—the chairman made the statement that it was the largest elementary school in the world—up to last June I had close to 4,000 children in one building, under one roof; but they took out 975 girls to put into a new building. In order to inspect 3,400 children in one year we issue a card to every child who goes to school. In his year the clerk issued over 4,000 of these cards. We have a chance, then, to examine a tremendous number of cards.

Special Defects Noted.

On the other side is the medical record, and there are fourteen distinct physical defects which have been noted. Four of the fourteen stand out with absolute definiteness. No one can look on a total of these cards without happening on these four: First, defective vision; second, nasal breathing; third, hypertrophy of tonsils; fourth, defective teeth. They always come in that order.

I have looked over a number of reports. Take Dr. Maxwell's report for this year—187,000 defective children, 26,000 defective vision, nine-tenths of which could be very easily remedied by glasses. A great deal of it comes from eye-strain, or stomach trouble, getting back to the teeth eventually. The rest can be easily cured. From 26,000 defective vision; the next jump was to 36,000 nasal breathers. The next jump is to 45,000 hypertrophied tonsils; and now comes the big jump, according to the report, 135,188 children with defective teeth.

A very interesting experiment was undertaken about a year ago, in June, 1909. On the 30th of June the promotions take place. About 86,000 for the city of New York were left back. I never had as large

figures as Dr. Darlington; 86,000 were left back in January, and 84,000 in June.

Investigation in Regard to Laggards.

A committee of five, including myself, thought we would try an experiment in several schools and find out just why they were left back. It took us nearly four months to do a simple thing. We had five schools, representing very diverse and peculiarly opposite schools. One was a famous girls' school, with a fine class of children. Another school, on Washington Heights, had a varied class of children, some very nice and some not so fashionable. One school was on the middle East Side, mostly Italian. Park Avenue, in New York City, makes a very distinct dividing line between Jewish and Italians. Then we had another school half-and-half mixture, largely Italian. My school of 3,800 was practically all Jewish. We agreed to find out how many hold-overs we had. The total registration of the five schools was a little over 11,000. We had left back 1,409, and we had the doctors' assistance in the schools. They became interested in the subject and we had those children given a very thorough medical examination. The doctor of the Board of Health in each school dropped everything and put those boys and girls through a severe physical examination.

Then we traced their family history, found out how long in this country, antecedents, etc., and the first thing that struck us again was that there were defective vision, 20%; nasal breathers, 25%; hypertrophied tonsils, 30%; and the teeth, 55%. Of those laggards, or hold-overs—and we were exceptionally careful to hold back only a few—nine-tenths of them owed their delay to physical condition, and to that alone. We know the so-called stupid boy, the one the teacher scolds and says never can learn, and who becomes bad and plays truant. Nine-tenths of this comes from some physical defect. I once laid it entirely to the tonsils and adenoids, but I do not believe these have half as much influence as the subject you are interested in, after all. Anybody can handle a boy whose teeth are in good condition, who has the first step in his digestive apparatus in sound condition; he can be taught—you can do anything with him. But when his face aches and his cheeks are swollen and his mouth is full of corruption and decay, how can you expect that child to do any work? He is irritated, the teacher is irritated, and one reacts upon the other.

We must improve the physical condition in our schools, because the schools are built for a certain purpose. They are built to make the citizens of this republic, and any principal or teacher who fails to make good citizens fails in his duty; and any part of this system of education which fails to put these children in a receptive condition is a failure. What

are we after? The three R's alone? No, the child of the poor man in the public school to-day has the same right as the child of the rich man to the heritage of literature and art, the great and noble epics written in the days gone by. The ideals are just as high, and the heritage of these poor children is as much their right as it is that of the children of wealth. It is the duty of the school to give them ideals, something which leads them beyond the sordid things of everyday life, so that they can appreciate in life the true and beautiful and good.

The words of Ruskin, who wrote sixty years ago, are just as true to-day as they were then. And yet people speak in this working day as if houses and lands and food and raiment alone are useful. We are all barbarians, so that there are men calling themselves hewers of wood and drawers of water who think the wood they hew and the water they draw are the great rivers that move along like eternity. We wish to give our boys and girls to-day the appreciation of something beyond the everyday things, and we wish to give them the greatest gift, the gift of true appreciation of citizenship.

There is a great deal of triteness in our talk of patriotism and devotion to the flag, but it means something more than to talk about once in a while. Let some great event stir the hearts of these people and all the triteness fades away, for men realize then what the flag means to them; and this should be, and is, taught to the pupils in the public schools. It never fails to arouse a thrill in the heart of a school man to see standing before him day after day a thousand foreign-born children and see their faces light up with pleasure and intense interest and stand at military attention; and when the flag is brought out, as it is brought out, thank God! in every school, see those little children stand before the teacher and at the word of command bring their hands up to salute and in unison give the words, simple and at the same time impressive, of salutation to the flag: "I pledge allegiance to my flag, and to the Republic for which it stands; one nation, indivisible, with liberty and justice for all."

That, ladies and gentlemen, is what the public school stands for, and it is for you to help make the children what they should be, and assist them to be able to receive what we wish to give them; to make them grow up not merely in body, but mentally, morally and physically able to be fit citizens of these United States.

Dr. Ottolengui. The feeling that I have right now is that I would like to take these three gentlemen and form a little company, and travel around these great United States, repeating the program that has been given here to-day, and carry the message all over this land.

There is just a word that I want to say by way of good night, especially to these gentlemen who are taking up these problems, and that is, about these statistics. Mr. Jenkins told us that the four defects that are always found are defective vision, defective breathing, defective tonsils and adenoids together, and defective teeth. Now I venture to say that on a closer analysis you would find that the majority of those with defective vision, the majority of those with defective breathing, and the majority of those with the adenoid and tonsil diseases, all have defective teeth; they all go to make up that greater average. Moreover, the average that has thus far been found is only by medical inspection, inspection made by an eye that will only see a dental defect which is so clear it cannot be overlooked. In a test inspection in the city of Cleveland, where the medical inspection had discovered 49% of defective teeth in a school, dental inspectors went and found 94% of defective teeth.

President's Address.

By ALBERT L. MIDGLEY, D.M.D., Providence, R. I.

Read before the National Association of Dental Examiners, Cleveland, Ohio, July 24, 1911.

The history of our organization is closely associated and is in harmony with the most significant epoch in American dentistry, and we have assembled on her twenty-ninth anniversary to discuss her activities and welfare. The National Association of Dental Examiners has always stood for higher dental education, skill and knowledge, that the public might be the more strongly fortified against ignorance, incompetency, quackery and disease, and that the entering student might be the more safely guarded against the forces of commercialism, with its attending evils.

At the outset I wish to express my appreciation and gratitude for the high honor you have conferred upon me in having chosen me as your President. At this time, also, I most gladly take the opportunity to thank the various officers and members of committees who have labored so zealously and untiringly in the work of the past year.

Position of Examining Boards.

When the State Legislature created Dental Examining Boards for the protection of the public they immediately constructed one of the most powerful machines for the uplift of dentistry and of dental education. For who will deny that when we perform our duties faithfully and efficiently we exert a forceful influence in raising the standards of dental education? Who will refuse to acknowledge that we are a reliable source of information and help to the dental college that trains men for other than merely commercial purposes? Who will refuse to grant that we point out very clearly the right paths to the entering student?

The attitude of the public, the college and the student toward dental examining boards is justifiable, and they are in the right when they demand men equipped with a profound knowledge of practical and theoretical dentistry, dental pedagogy, legislation and jurisprudence. We wish to state here that the conclusions reached in this discussion are the logical outcome of certain fundamental basic principles of our existence and usefulness, namely, the protection of the public and of the entering student, and the maintenance of high dental educational standards.

Much has been said and written about reciprocity, matriculation and graduation requirements and qualifications of candidates desiring to be registered. To enter into a deep discussion of these topics would be

useless repetition and an imposition upon your good nature, therefore my beliefs upon these subjects will be set forth as briefly as possible.

Reciprocity.

You will agree that the laws of all States should require that every candidate for registration be examined, and that the character of the examination be left entirely to the discretion of the Board. Although the ideal reciprocity that we hope for has become a reality, is not the reciprocity that can be brought about with the above provisions in the law really practical and useful? Is it not effective and safe? We of the New England States have seen this reciprocity practiced and are led to believe that it is effective and safe, and that it works no hardship for the man who has been in practice for years, provided that he has walked the straight and narrow path that a true professional spirit demands.

Matriculation Should be Examined.

If the license to practice is a surety of knowledge and skill, it seems both fair and logical to conclude that the Dental Examining Boards should at least have the power to insist upon such preliminary educational standards as the State's own educational system warrants. The vast majority of teachers and educators in any branch of learning agree that the knowledge and development acquired from a four-years' course of study in a reputable high school, or its equivalent, should be the very minimum standard of education for a man who is about to enter upon the study of any art, science or profession. They believe that he must have this equipment if he is to grasp clearly and intelligently the fundamental problems that will confront him. This leads us to the question of preliminary requirements both for matriculation and graduation, and requisites for registration.

In giving weight to the value of a high school diploma we should remember that at the present time the recipient of a diploma from even a reputable high school may possess only a meagre knowledge of the very essentials of a high school education, which are so necessary as a foundation for dental study. For instance, he may be very weak in English, physics, chemistry, etc. This condition is due to the wide latitude granted elective study in working for a diploma. How often have we corrected the papers of a graduate in dentistry and been amazed at the utter ignorance of the writer in the prime essentials of English grammar and spelling? For these reasons we believe that the candidate for matriculation should not only be a graduate of a reputable high school, or have an equivalent preparation, but that entrance to college should be by examination in each and every case. From our written tests we all know that men are now graduating from recognized schools who never had the preparation we advise. You should see to it that our wishes in this

respect are lived up to. We should use every means within our reach to arrive at that goal where entrance to college in every State is always by examination, and that examination under the supervision of the State Educational Board.

Requirements for License Examination.

If it were incorporated in our dental laws—and it will be some day—that the candidate for registration must possess a dental degree, our efforts in performing our duties could be performed directly or indirectly: directly, by refusing to examine; indirectly, by rejecting the applicant.

Some of our most capable men believe that it is un-American to insist upon certain preliminary entrance requirements and the holding of a dental degree before accepting the candidate for examination. They argue that it matters not how or when or where a man receives his training, if he but have the requisite knowledge and skill. This very democratic argument may have a true American ring, yet it does not seem reasonable to suppose that a man can acquire outside of a dental school the knowledge and skill that the dentistry of to-day calls for. If my position in this is right, it is an injustice to the applicant to encourage him by receiving his examination fee. It is also a waste of both his and the examiner's time.

The dentistry of to-day is more than the mere filling, cleaning, extracting and replacing of teeth. Among other things, it affords opportunity for study, learning and research in the laboratories of physiology, pathology, bacteriology, etc. It also offers the way and the means in the operative infirmary and in the departments of oral surgery and anæsthesia for a man to acquire a happy combination of clinical and theoretical study, so essential in diagnosis and in medical and surgical technique.

The better protection of the public and the uplift of dentistry require a man with a theoretical and practical knowledge of scientific dentistry, and scientific dentistry can be properly taught only in a well-equipped dental school; not under the eyes of a preceptor with a busy practice.

We therefore urge that all States aim to have a dental degree as one of the requisites for registration.

Tabulating and Joint Tabulating Committee.

Abraham Flexner said that State medical examining boards are the instruments through which the bettering of medical education would be largely effected. The same statement is true of dental examining boards in the elevation of dental education. In the past we have been free-hearted and broad-minded in estimating from our tabulated list the value

of the product of the institutions that are moulding the future of dentistry. To-day also our attitude is the same vigorous unity of heart and mind, and this assures us that our efforts are not wasted and that our motives cannot be questioned nor misjudged. Before the birth of the Tabulating Committee our estimate of the quality of the product graduating from the dental college could be neither accurate nor just. It was necessarily arbitrary. Now, after six years' use of this powerful investigating probe, we have some very plain and unvarnished truths; we also are able to make honest, sane deductions, which are ratified by those whom we investigate.

Since the formation of the Joint Tabulating Committee at Minneapolis in 1907 there has been a strong minority in our midst opposed to joint tabulation. Former joint conferences teemed with strife and discord, and were not productive of advancement in certain directions. These experiences, no doubt, were the principal reasons against joint committees. Now, with the present system of tabulation, harmony reigns, and from what has been shown this past year, and from information gathered from our worthy Secretary, Dr. Thomas A. Broadbent, who has very capably and efficiently taken up the work where it was left, I feel assured that the continuation of this committee is warranted. Therefore, I advise the continuation of this joint committee, and I urge it solely on the ground that our sound, healthy deductions from tabulation are endorsed by those upon whom we throw the searchlight of investigation.

Publicity of Findings.

Within the last two years the movement for higher dental educational standards has become very widespread, and it has now reached such proportions that it is one of the absorbing topics at all of our prominent dental society meetings. The first active element in this agitation was our own organization, with its tabulation. A powerful contributing influence also was the investigation of the medical colleges by the Carnegie Institute for the Foundation of Teaching, for we were only too ready and too willing to believe that what was said of medical educational standards might be equally true of dental standards. Another factor in this advancement was that the Dental Faculties Association of American Universities recently took action urging investigation. The latest body to enter the field is the Dental Educational Council of America. With our Tabulating Committees and our Committees on Colleges we have the agents, and with our results of tabulations we have the instruments for conducting an honest, searching investigation into the educational merits and worth of the various colleges. In view of this general activity and with the evidence at hand, does it or does it not appear to you that the time is drawing near for wider publicity of our records and

findings? Having the proof, is it for the best welfare of dentistry and of our National Association for us to sit idly, resting on our oars, and let others render a verdict with our evidence? If you are convinced that we have sufficient evidence to extoll or to condemn, then let us hand down our verdict in no uncertain terms. Let us not lag, but with our tabulation weapons let us spur on our activities by considering how and when and where we are to give publicity to our findings. If, on the other hand, you feel that we are not warranted in following such a course now, that our verdict might be unjust, at least let us continue to strive more actively in our search for the truth. In this connection it might be well to consider the feasibility of adopting a system of grading or classification of the schools in our report, designating whether their products are excellent, good, fair, etc.

Dental Educational Council.

A matter that appears to be worthy of your consideration is our position in the Dental Educational Council of America. I understand that this body is purely an advisory one, and do not wish to obstruct in any way the valuable work for which it was organized. Therefore, we take up the following subject solely for our own information and the welfare of the Educational Council, of which we are a component part.

Through a circular letter sent out by the Council to the State examining boards we learn that the Committee on Colleges of the Dental Educational Council is to undertake an investigation of the various dental schools. We do not for an instant doubt the high and well-intentioned motives of all men in the body, nor do we wish to criticise their actions, but we do question whether it is wholesome and salutary to have on this particular committee faculty members who are to look into the worth and usefulness of their own colleges. Is this good judgment? I may have a mistaken idea as to what they intend to do, but I think you must concede that an immunity granted any college by this Council, with faculty members on its College Committee, will neither be beneficial nor lasting. This question is brought to your attention only for the good of the cause, and nothing of a personal nature is intended or implied.

To bring this matter before you for action the following recommendation is offered:

"That it is the sense of the National Association of Dental Examiners that the Committee on Colleges of the Dental Educational Council of America be composed of three members from the National Association of Dental Examiners and two members from the National Dental Association."

Accredited Lists.

At the present time we require that 60 per cent. of the graduates of any college must successfully pass our examinations, if that school is to remain on our accredited list. Is our standard in this direction below what it should be? Would we be placing a hardship on any good school should we raise the standard to 70 per cent.? It seems to me that we would not be overexacting if we say that seven of the ten men that a school graduates must be qualified to practice. My opinion is that unless we raise our standard to this mark we are fostering low dental educational standards, and not keeping abreast of the strides of dentistry.

We therefore recommend the following:

"That 70 per cent. of the graduates of a school must successfully pass our examination, if that school is to retain a place on our accredited list."

Commencement Dates.

During the past year complaint has been made that the dates on which the examining boards meet in certain States conflict with the commencement dates of certain colleges. We realize that it is often very difficult for boards to arrange their time of meeting without interfering with the dates of examinations in other States, with society meetings or with commencements. However, if the State law does not specify when an examination is to take place, we ought to be able to arrange a date satisfactory to all. Therefore, we urge that State boards try to arrange their dates of meeting so that they will not conflict with college events, or with examinations in other States.

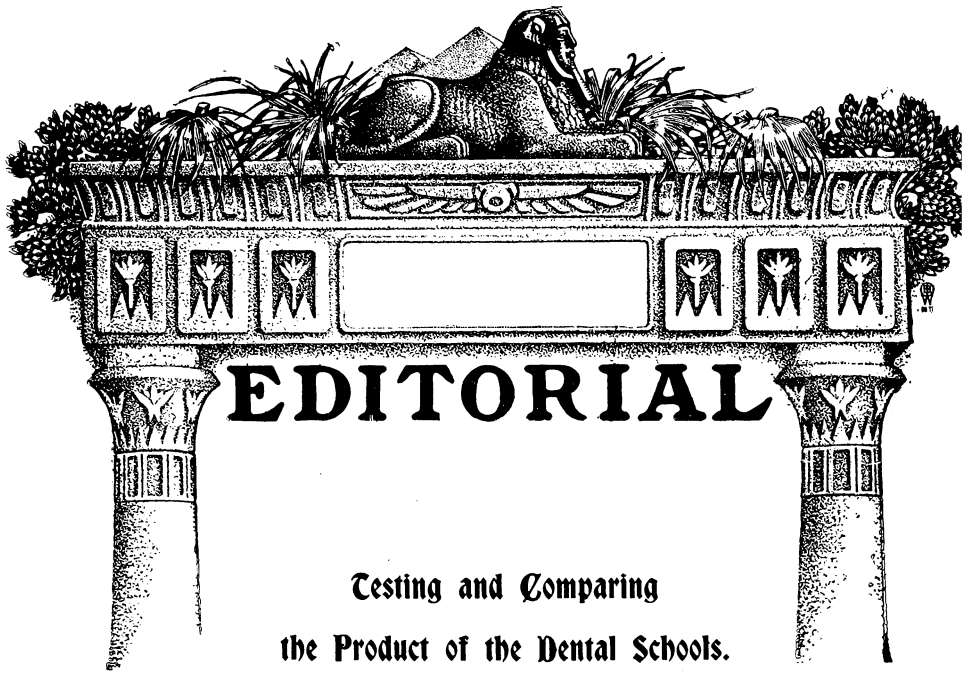
Conclusions.

In this brief review we have tried to cover some of the essential points which are vital to the very existence of our organization. They have been offered for your deliberations for the uplift of dentistry, and particularly for the welfare of our association. In accepting or rejecting any or all that has been said, I trust that these two reasons alone will guide you in reaching your conclusions.

In an address before the National Confederation of Medical Examining and Licensing Boards it was said: "Probably at no time in the history of your organization has the opportunity presented where you can be of more service to medicine and of more influence for the better protection of the public." To my mind these words very truly describe the position and force of our organization.

Let watchfulness, breadth of vision and increased activity for the protection of the public and of the entering student characterize our practical work. Let us see to it that men of natural endowment and ability,

men of high professional ideals, men who are willing to do their share in the service of their kind, enter the field of scientific dentistry, that the noble structure built and carved by our predecessors may ever remain on its broad, firm base as a monument to dental education, as an armor of public safety.



EDITORIAL

Testing and Comparing the Product of the Dental Schools.

There is probably no provision of the Constitution of the United States more jealously guarded than that which guarantees the right of self-government to the several States. In the original pact the sovereignty of each State was specially reserved, while to Congress was granted only the right to make such laws as would affect the community of States as a whole.

This is a beautiful theory, just as admirable as that other rule of our Government which declares that all men are born free and equal. Under this latter principle the individual is granted full personal liberty, which is limited only when in the exercise of that liberty he encroaches upon the liberty of some other individual. A similar proper limitation of States' rights is becoming more and more apparently essential. The sovereignty of a State and the right to enact and enforce laws regulating the conduct of its own citizens is seemingly fair enough, but if in the enforcement of its laws it should invade the rights or liberty of a citizen of a sister State, what then? This has long been regarded as the weak point in our system of Government, and in recent years there has been a growing sentiment in favor of so amending our National Constitution

as to grant to the central Government such increased powers as will cure the evils arising from this source.

At the present time the question of an amendment to the Constitution granting to Congress the right to enact a National law regulating marriage and divorce is seriously discussed, as the only means of rectifying one of the greatest evils which has arisen out of the principle of State sovereignty.

At Spring Lake, New Jersey, during the month of September there was a convention of Governors, at which the State Executives of thirty-eight States were present. Many brilliant speeches were made upon the topic of marriage and divorce, and while a few of the more radical favored an amendment to the National Constitution as the best and quickest method of solving the problem, the majority of the Governors seemed to favor the idea that it would be preferable to endeavor to formulate a proper statute and then present it for adoption by all the States, thus accomplishing the desired end without invading the rights of the States to govern their own citizens.

National Association of Dental Examiners.

This House of Governors is very analogous to the annual meeting of the National Association of Dental Examiners. When gathered together in conference they are but private citizens, without power to take any action which can be positively or legally enforced. Nevertheless, as suggested by these Governors, they could readily appoint a committee to frame a proper statute regulating marriage and divorce; then if each Governor should return to his home and send to his Legislature the proposed statute with a recommendation that it be adopted, that would be an official act, and the result would probably be that many States would follow the advice contained in these Governors' messages.

This plan was long ago pointed out in ITEMS OF INTEREST as a possible means of obtaining uniform dental statutes and reciprocal exchange of licenses. Yet the National Association of Dental Examiners has met year after year and has done practically nothing towards this end.

The Association, however, did inaugurate an attempt to examine into and compare the products of the dental schools. A so-called Tabulating Committee was appointed, whose duty it has been to obtain from

the examining boards of the country records of their examinations, from which statistics have been compiled, which show the proportion of graduates of the several schools which have been licensed or rejected. This project necessarily entails a tremendous amount of work, and while something, of course, may be gained from a study of these tabulations after a few years, nevertheless the result is far from being either satisfactory or convincing, and the object of this editorial is to suggest a means by which the Association of Examiners may render this work of its Tabulating Committee much more thorough, and consequently, much more just.

The Unit of Measurement.

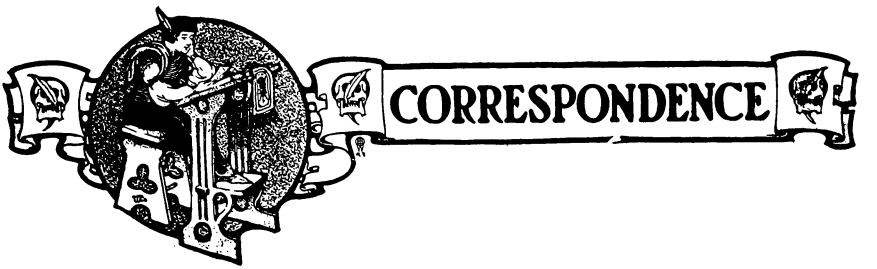
It is a self-evident proposition that no just measure of any product may be obtained without a universal unit of measurement, and this is woefully lacking in the statistics under discussion.

Let us suppose that a college in the State of New York should graduate fifty men. Ten of these apply for license in Ohio and all are passed. Forty apply for examination in New York State and ten are rejected. Tabulation would show that ten out of fifty were rejected, the school thus "losing" 20% of its graduates. Suppose that the ten who were rejected had gone to Ohio, while the ten who went to Ohio had remained in New York. It is possible that those who passed in Ohio might also have been able to pass in New York, while those rejected in New York might have been able to pass the Ohio Board, in which case the school would have made a record of 100% instead of 80% of its graduates passing State Board examinations. Moreover, these quite different percentages would have been obtained with identically the same class, or product. Again, suppose that the entire class had been examined in Illinois. It is possible that fifteen or twenty of them might have been rejected. In other words, the arduous labors of the Tabulating Committee have produced a set of statistics which are interesting and even instructive, but not absolutely accurate, because the standards and methods of examination are so entirely different in the various States.

Is it possible to erect a universal unit of measurement of the product of the schools? There is, if the National Association of Dental Examiners is really desirous of carrying out such a project.

Let the Association appoint a Committee on Examinations, whose duty it shall be to prepare examination questions for the theoretical examinations, together with an outline of the practical examinations, to be conducted by all Boards, members of the Association, each year. In this manner students would be called upon to pass nearly identical State Board examinations in all States. Undoubtedly the proposition is not so simple as it may seem, and many obstacles will arise to be overcome; but there is also no doubt that all obstacles may be overcome and the project made successful.

One of the first difficulties probably will arise from the fact that State Board Examinations occur at different times and with differing frequency in the various States. This might be corrected in the manner recommended by the House of Governors in regard to marriage and divorce. Nearly all the college commencements occur at about the same time of year, and the State statutes could be amended so that one examination at least should occur in all parts of the country simultaneously, and shortly after the termination of the school terms. All that is needed is a unity of purpose and honesty of action in order to obtain uniformity of State Board examinations, after which reciprocal exchange of licenses would be a simple and readily solved problem.



National Dental Association.

Notice to the Profession.

In justice to the Association, Dr. Johnson and the profession, it has been deemed advisable to send a statement to all the dental journals for publication in their October issues in order that the dental profession, in so far as possible, may be correctly informed concerning a widely circulated report that the National Dental Association took official action at the Cleveland meeting condemning tooth powders, pastes and mouth washes.

Dr. C. N. Johnson, of Chicago, read a paper entitled, "Mistakes, Common and Uncommon," from which the following is quoted, this being the only part of his paper which refers in any way to this question:

C. N. Johnson's Views on Dentifrices.

"And in this connection there is another mistake which the profession is fostering and to which attention should be called. This is the constant use of mouth washes among our patients irrespective of whether or not they are indicated. I am far from condemning the legitimate use of carefully prepared stimulating and antiseptic solutions in those cases where the abnormal conditions in the mouth indicate such treatment, but mouth washes should be limited to their proper indications, and should be eliminated from use in healthy mouths. Their use in these cases has a tendency to do more harm than good. If the mouth is healthy there is always the danger of disturbing the normal balance by the introduction of agents which tend to interfere with function. The maintenance of function is the surest way to health, and consequently, the healthiest mouth is the one in which function is most fully performed. The best stimulant for the gum tissues and the best polisher of enamel is the friction of food in the function of mastication, but unfortunately, mastication is not always carried out to its fullest efficiency. Therefore, we use tooth brushes to make up this dereliction, and the moment we begin to depend upon solutions and washes to do the work which should be done mechanically by mastication and the brush, that moment the tissues begin to deteriorate. I am not arguing

against the use of a wash where the tissues are inflamed and the gums puffed and swollen, nor am I criticizing, as some have done, the mouth washes which are on the market to-day, many of which seem to be carefully compounded, but I venture to suggest that if the patient could be prevailed upon to have all irritants removed from the teeth, in the way of deposits, and the gums properly stimulated by massage and the friction of food and the brush, that the restoration to health would be just as certain as by the use of drugs, and it would be more permanent. But just here is the rub. It seems so hard to get the average individual to properly care for the teeth and gums by mechanical means unless some powder, paste or wash is prescribed as an incentive. In this particular these agents have been useful. They have been the means of inducing many negligent individuals to take care of the mouth when otherwise it would have gone neglected. Most of them are prepared with a pleasant flavor and they leave the mouth with a refreshed and wholesome feeling, as is so often expressed by the patients.

"But the whole tendency of our teaching should be in the direction of preserving the normal balance between function and death, rather than the glossing over of conditions by a false reliance on drugs. It is too much akin to the habit of using powerful and not always pleasant perfumes as a substitute for good, honest cleanliness of person. The individual who carries with him the odor of the bath has little need for musk, and he whose teeth and mouth are kept constantly clean is seldom obliged to resort to the 'doping' of drugs."

In addition to this, the official stenographer writes that one of the discussers stated that "water was the best thing to use in brushing the teeth."

This paper was read before Section II, and did not come before the Association in any other way, and no official action, as some of these reports would seem to convey, was taken by the Association.

Fraternally yours,

A. R. MELENDY, President.

H. C. BROWN, Recording Sec'y.

SOCIETY ANNOUNCEMENTS

National Society Meetings.

NATIONAL DENTAL ASSOCIATION, Washington, D. C., September, 1912.

NORTHEASTERN DENTAL ASSOCIATION, Portland, Me., October 26, 27, 28, 1911. Secretary, Dr. Edgar O. Kinsman, 5 Boylston St., Cambridge, Mass.

American Dental Society of Europe.

At the 38th annual meeting of the American Dental Society of Europe, held at Dresden July 27th to 31st, the following new members were elected for the ensuing year: President, Dr. T. G. Patterson, Geneva, Switzerland; Vice-President, Dr. C. H. Abbot, Berlin, Germany; Hon. Secretary, Dr. G. H. Watson, Berlin, Germany; Hon. Treasurer, Dr. E. F. Day, London, England; Microscopist, Dr. C. F. Bödecker, Berlin, Germany. The next meeting will be held at Brussels, Belgium, at Easter, 1912.

G. H. WATSON, Hon. Secretary.

7 Pariser Platz, Berlin, Germany.

National Association of Dental Faculties.

At the 28th annual meeting of the National Association of Dental Faculties, held at the Hotel Hollenden, Cleveland, Ohio, July 21, 1911, the following officers and committeemen were elected and appointed for the ensuing year:

President, Dr. C. R. E. Koch, Northwestern University Dental School, Chicago, Ill.

Vice-President, Dr. W. E. Willmott, Royal College of Dental Surgeons, Toronto, Canada.

Secretary, Dr. George Edwin Hunt, Indiana Dental College, Indianapolis, Ind.

Treasurer, Dr. W. Clyde Davis, Lincoln Dental College, Lincoln, Neb.

Executive Committee: B. Holly Smith, chairman, 1007 Madison Avenue, Baltimore. Md.; A. G. Friederich, secretary, 830 Carondelet Street, New Orleans, La.; Dr. W. T. Chambers, Dr. A. R. Starr, Dr. C. C. Allen.

Ad-interim Committee: Dr. W. Clyde Davis, chairman, Richards Block, Lincoln, Neb.; Dr. S. W. Foster, Dr. Eugene Dubeau.

Committee on Law: Dr. William Carr, chairman, 35 West 46th Street, New York, N. Y.; Dr. H. C. Miller, Dr. J. W. Smith.

Committee on Text-Books: Dr. E. E. Belford, chairman, 1250 East 9th Street, Cleveland, Ohio; Dr. C. H. Howland, Dr. D. J. McMillen, Dr. William Crenshaw, Dr. G. B. Snow.

Committee on Foreign Relations: Dr. J. D. Patterson, chairman, Keith Perry Building, Kansas City, Mo.; Dr. T. W. Brophy, Dr. H. L. Banzhaf, Dr. H. W. Morgan, Dr. C. R. E. Koch.

Tabulation and Conference Committee: H. E. Friesell, chairman, Pride and Bluff Streets, Pittsburg, Pa.; H. L. Banzhaf, E. A. Johnson.

Dental Educational Council: H. L. Banzhaf, W. E. Grant, George E. Hunt, J. D. Patterson, H. E. Friesell.

National Dental Association.

There will be a meeting of the Executive Council of the National Dental Association, November 4th, at 10 A. M., at the New Willard Hotel, Washington, D. C.

This meeting is called for the purpose of selecting Section Officers and Committees for the coming year, and was authorized by the Association at the Cleveland meeting. Members desiring to offer suggestions or recommendations in this connection should promptly communicate same to any member of the Council, or the undersigned.

H. C. BROWN, Rec. Sec'y,
185 East State Street,
Columbus, Ohio.

Michigan State Board of Dental Examiners.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the dental college, Ann Arbor, commencing Monday, November 13th, at 8 A. M., and continuing through the 18th. For application blanks and full particulars address A. W. HAIDLE,
Negaunee, Mich. Secretary.

Northeastern Dental Association.

The seventeenth annual meeting of the Northeastern Dental Association will be held in the Lafayette Hotel, Portland, Maine, October 26-28, 1911. Doctors Ottolengui, Rhein, Taggart and Goslee are promised as essayists. The clinics will be numerous and interesting, as well as the exhibits.

Remember the time and the occasion, and plan to attend.

EDGAR O. KINSMAN, Secretary.

Cambridge, Mass.

Alumni Department, University of California.

The Alumni Department of the University of California will hold its midwinter clinics on Friday evening, November 24, 1911, in the rooms of the San Francisco Medical Society, ninth floor of the Butler Building.

FRED F. SEIFERD, Secretary.

881 Eddy Street, San Francisco, Cal.

Connecticut State Dental Commissioners.

The Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford on November 16, 17 and 18, 1911, to examine applicants for license to practice dentistry, and for the transaction of any other business proper to come before them. Application blanks, rules, etc., will be forwarded by the recorder upon request.

By order of the Commission.

D. EVERETT TAYLOR, Recorder.

Willimantic, Conn.

The personnel of the present Board of Dental Commissioners of the State of Connecticut is: President, Howard G. Provost, D.D.S., Winsted; Recorder, D. Everett Taylor, D.D.S., Willimantic; Albert W. Crosby, D.D.S., New London; Edward Eberle, D.D.S., Hartford; William H. Metcalf, D.D.S., New Haven.

South Dakota Dental Society.

The annual meeting of the South Dakota Dental Society will be held on the second Tuesday and Wednesday of May of each year.

M. R. HOPKINS, Secretary.

Chicago Dental Society.

The Chicago Dental Society has planned for an enormous two-days' celebration, January 22d and 23d, 1912. This will be the forty-eighth annual meeting of the society. We will have clinics on both days, and papers read by the best men obtainable on both evenings.

This society has attained a membership of almost 1,200 members, and we propose to make this one of the greatest celebrations we have ever attempted.

FRED. W. GETHRO,
Chairman Publicity Committee.

Maryland State Board of Dental Examiners.

The Maryland State Board of Dental Examiners will meet for examination of candidates for certificates November 8th and 9th, 1911, at the Dental Department of the University of Maryland, Baltimore, at 9 A. M.

For application blanks and further information apply to

F. F. DREW, D.D.S., Secretary.

701 North Howard Street, Baltimore, Md.

Wisconsin State Dental Society.

The Wisconsin State Dental Society held its forty-first annual meeting at Eau Claire, Wis., July 11, 12 and 13, 1911. The following officers were elected: President, Dr. H. L. Banzhaf; Secretary, Dr. O. G. Krause; Treasurer, A. Gropper.

The 1912 meeting will be held at Oshkosh, Wis., July 9, 10 and 11, 1911. O. G. KRAUSE, Secretary.

Wells Building, Milwaukee, Wis.

New Jersey State Board of Registration and Examination in Dentistry.

The State Board of Registration and Examination in Dentistry of New Jersey will hold its annual meeting in the State House, Trenton, N. J., December 4th, 5th and 6th.

Candidates for examination are requested to have their applications in the hands of the Secretary ten days prior to the date of meeting.

For information apply to the Secretary, Charles A. Meeker, D.D.S., 29 Fulton Street, Newark, N. J.

QUOTATION FROM THE NEW DENTAL LAW OF NEW JERSEY.

Applicant shall present to said Board a certificate from the Superintendent of Public Instruction of this State, showing that before entering a dental college he or she had obtained an academic education consisting of a four-year course of study in an approved public or private high school or the equivalent thereof.

This law was signed April 11, 1911, and goes into effect January 1, 1914.

This will require matriculants of 1911 to comply with the above section of the law as to preliminary requirements, if they desire to take the examination of the Dental Examining Board in New Jersey.

CHARLES A. MEEKER, D.D.S.,
29 Fulton Street, Newark, N. J. Secretary.

National Dental Association.

Publicity Committee.

The dental educational series, now running in the newspapers in Indiana and Illinois, has been accepted by the Western Newspaper Union, 521 West Adams St., Chicago, as a part of their regular service. They are fully equipped to handle this matter expeditiously.

All advance orders that have been sent to me will be filled by the Western Newspaper Union as soon as shipping arrangements are completed for the different States.

As this work has now passed into their hands, any, who are interested, should address their correspondence to them.

C. B. WARNER, Chairman.

Urbana, Ill.

Northern Illinois Dental Society.

The twenty-fourth annual meeting of the Northern Illinois Dental Society will be held on the third Wednesday and Thursday (18th-19th) of October in Rockford. A program of unusual interest has been prepared, and members of the profession are requested to be present.

EDMUND NOYES, President.
F. H. BOWERS, Secretary.

Texas State Board of Dental Examiners.

The next meeting of the Texas State Board of Dental Examiners for the purpose of examining applicants for a license to practice dentistry

and dental surgery in the State of Texas will be held in Austin, Texas, beginning Monday, December 11, 1911, at 9 A. M.

For application blanks and any further information, address

J. M. MURPHY, Secretary.

Temple, Texas.

Massachusetts Board of Registration in Dentistry.

A meeting of the Massachusetts Board of Registration in Dentistry will be held in Boston October 25-26-27, 1911.

For application blanks and further information apply to

14 Water St., Haverhill, Mass. Dr. G. E. MITCHELL, Secretary.

Illinois State Board of Dental Examiners.

The semi-annual meeting of the Illinois State Board of Dental Examiners, for the examination of applicants for a license to practice dentistry in the State of Illinois, will be held at the Illinois University College of Dentistry, corner Honore and Harrison Streets, beginning Monday, December 11, 1911, at 9 A. M. The following preliminary qualifications shall be required of candidates to entitle them to examination by this Board for a license to practice dentistry in the State of Illinois:

Graduates of a reputable dental or medical school or college, or dental department of a reputable university, who enter the school or college as freshmen on or after the school year, 1906-7, must have a minimum preliminary education of not less than graduation from an accredited high school, or a certificate from the State Superintendent of Public Instruction, equivalent officer or deputy, acting within his proper or legal jurisdiction, showing that the applicant had an education equal to that obtained in an accredited high school, which certificate shall be accepted in lieu of a high school diploma. Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications accompanied with the fees must be filed with the secretary at least five days prior to date of examination. The examination fee is $20, with additional fees of $5 for license, and $1 for registration certificate. Address all communications to T. A. Broadbent, Secretary, 705 Venetian Building.

National Association of Dental Examiners.

At the annual meeting of the National Association of Dental Examiners, held in Cleveland, the following officers were elected for the ensuing year: President, T. E. Turner, D.D.S., St. Louis, Mo.; Vice-Presidents for the West, J. H. Wallace, D.D.S., Omaha, Neb.; for the

East, Edgar A. Honey, D.D.S., Kalamazoo, Mich.; for the South, John P. Stiff, D.D.S., Fredericksburg, Va.; Secretary-Treasurer, T. A. Broadbent, M.S., D.D.S., 15 E. Washington St., Chicago, Ill.

Committee on Colleges: Thomas J. Barrett, D.D.S., Chairman, Worcester, Mass.; Starr Parsons, M.D., D.D.S., Washington, D. C.; George E. Haigh, D.D.S., Jefferson City, Mo.

Tabulating Committee: T. A. Broadbent, M.S., D.D.S., Chairman, Chicago, Ill.; F. R. Henshaw, D.D.S., Indianapolis, Ind.; D. D. Atkinson, D.D.S., Brunswick, Ga.

Joint Tabulating Committee of the N.A.D.E. and N.A.D.F.: John F. Dowsley, D.D.S., Chairman for N.A.D.E., 175 Tremont St., Boston, Mass.; T. A. Broadbent, M.S., D.D.S., Chicago, Ill.; Thos. J. Barrett, D.D.S., Worcester, Mass.; H. E. Friesell, Chairman for N.A.D.F., Pittsburg, Pa.; H. L. Banzhaf, D.D.S., Milwaukee, Wis.

Joint Conference Committee, composed of five members each of the N.A.D.E., N.A.D.F. and N.D. Association for N.A.D.E.: Charles P. Pruyn, D.D.S., Chairman, 108 N. State St., Chicago, Ill.; George E. Mitchell, D.D.S., Haverhill, Mass.; A. L. Midgley, D.D.S., Providence, R. I.; C. F. Ladd, D.D.S., Lincoln, Neb.; G. O. Orr, D.D.S., Jordan, Minn.

Arizona Board of Dental Examiners.

There will be a meeting of the Arizona Board of Dental Examiners at Phoenix, Arizona, October 23-27, 1911.

Candidates should have their application, and fee of $25 should accompany same, at least twenty days before meeting.

Theoretical examination includes the following subjects: Anatomy, Physiology, Chemistry, Materia Medica, Therapeutics, Metallurgy, Histology, Pathology, Operative and Mechanical Dentistry, Oral Surgery, Practical Demonstration of Skill in Operative and Mechanical Dentistry will also be required, and candidates should come prepared with instruments and material for making fillings and crowns in the mouth.

W. A. BAKER, D.D.S., Secretary and Treasurer.

Tucson, Arizona.